

ALTITUDE TABLES

COMPUTED FOR INTERVALS OF FOUR MINUTES

BETWEEN THE

PARALLELS OF LATITUDE 0° AND 30°

AND

PARALLELS OF DECLINATION 0° AND 24°

DESIGNED FOR

THE DETERMINATION OF THE POSITION LINE
AT ALL HOUR ANGLES
WITHOUT LOGARITHMIC COMPUTATION

BY

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CHAPLAIN AND NAVAL INSTRUCTOR IN HIS MAJESTY'S FLEET

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Laudate Dominum de cœlis :
Laudate eum in excelsis :
Laudate eum, sol et luna :
Laudate eum, omnes stellæ, et lumen.
Quia ipse dixit, et facta sunt :
Ipse mandavit, et creata sunt.
Statuit ea in æternum, et in sæculum sæculi :
Præceptum posuit, et non præteribit.
Psalm cxlviii. 1, 3, 5, 6.

PREFACE.

THIS Volume is a continuation of the Altitude or Position Line Tables already published for the higher latitudes 31° to 60° , and makes the method of determining the Position Line to which they are adapted complete between latitudes 60° N. and 60° S., and declinations 24° N. and 24° S. Since latitude and declination are interchangeable in using the Tables, the navigator within the tropics will now be able to apply this method to all stars which are not of greater declination than 60° , thus leaving very few navigational stars outside the limits provided for.

It is hoped that by removing the necessity for solving spherical triangles these Tables may lead to the more general use of the New Navigation, which has in recent times been adopted as the standard method of determining Position Lines in the Royal Navy.

The advantages claimed for the Tables are—

- (1) Simplicity.
- (2) Uniformity; since all sights, whatever the Hour Angle, are dealt with in the same manner.
- (3) Interpolation is reduced to a minimum, there being only one correction to the Altitude taken from the Tables.
- (4) The necessity for solving spherical triangles is avoided.
- (5) Clerical work is greatly diminished, and consequently an increased probability of accuracy is attained.
- (6) Rapidity in determining the required result.

The Tables being intended to apply to all heavenly bodies within the given limits of declination, the expression "Westerly Hour Angle" is used in preference to "Apparent Time" at the head of the columns.

In such Tables extreme accuracy within assigned limits is of the first importance, and it is hoped that for Altitudes less than 70° the error will in no case exceed $\cdot 2$ or $12''$, but above that value a gradually increasing error may be met with, the amount of which is believed to be in all cases considerably less than $1'$.

For Altitudes above 70° the method of the Tables is not recommended; these Altitudes are inserted for observatory and general use rather than for purposes of navigation.

The calculation of the Altitudes has been made by Messrs. W. Bowyer, D. J. R. Edney, J. E. Evans, and H. Furner, established computers at the Royal Observatory, Greenwich, under the superintendence of A. C. D. Crommelin, Esq., F.R.A.S., who has checked their work by independent calculations. The method of differencing has also been employed throughout, and every precaution has been taken to ensure accuracy in the printing.

I desire to express my gratitude to Sir William H. M. Christie, K.C.B., F.R.S., Astronomer Royal, for his kindness in consenting to the employment of members of the Observatory Computing Staff when not engaged in the work of

the Observatory, to Professor J. A. Ewing, F.R.S., Director of Naval Education, for his kind assistance and encouragement, and particularly to Mr. Crommelin for his invaluable help and unfailing interest in the preparation of the Tables, many of the important features of which are due to him, in addition to the general supervision of the work.

My thanks are also due to the computers for the zeal and efficiency with which they have carried out their part of the undertaking.

The favourable criticisms that I have received of the earlier volume lead me to hope that the Tables may lessen the labours of navigators, and prove generally useful to the maritime community.

FREDERICK BALL.

H.M.S. "Cambridge," Devonport,
August 1907.

EXPLANATION OF THE USE OF THE TABLES.

The utility of these Tables depends on the fact that at any instant the zenith distance of a heavenly body, expressed in minutes of arc, is equal to the distance of the observer from the point on the Earth's surface vertically underneath the heavenly body (called its **Geographical Position**) expressed in nautical miles.

Thus, in the figure, the observer is at O, the heavenly body X is vertically overhead at G, and OGF is the great circle passing through O and G. Then the zenith distance of the body when observed from O is ZOZ. And $ZOX = OCG$, which measures the arc OG on the Earth's surface. Hence, for this particular zenith distance and its corresponding altitude, the observer must be at a distance equal to OG from G; that is, on a small circle OAO', of which G is the pole, or spherical centre.

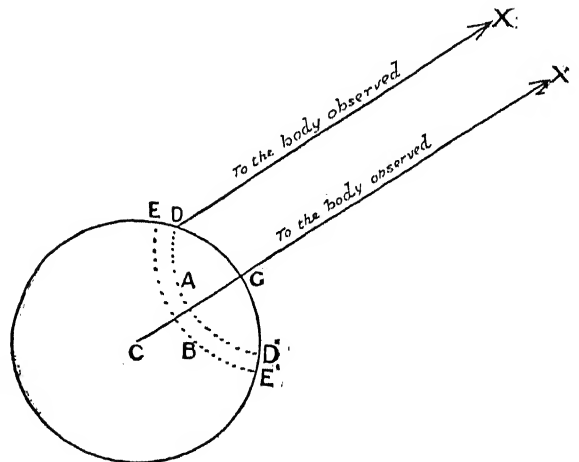
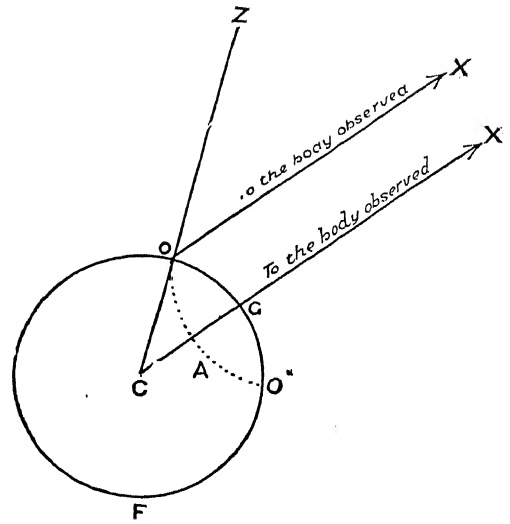
It is easily seen that the smaller the zenith distance (or, the greater the altitude) the nearer the observer is to G, and vice versa.

Also we notice that OG is the horizontal direction, or true bearing, of the heavenly body, as seen from O, and that, for small distances on both sides of O, the arc of the circle OAO' will practically coincide with the rhumb line drawn at right angles to OG, the true bearing of the body, and this rhumb line we call a "**Position Line**."

But we must notice that the distances over which this will hold good get smaller as the circle gets smaller; that is, as the altitude of the body increases. For this reason **it is not advisable for the navigator to use altitudes of over 70° without considerable caution.**

Suppose now that D is the position of the ship by dead reckoning when an observation is taken, and that the true altitude of the heavenly body, by observation, is, say, $30^{\circ} 0'$. Let the calculation be now made what the true altitude *would* be if the ship *actually* were at D, and suppose it is found to be $30^{\circ} 10'$.

Then, instead of being at D, the ship must be somewhere on the circle EBE', whose spherical radius GE is $90^{\circ} - 30^{\circ}$, or 60° , while the radius of DAD' is $90^{\circ} - 30^{\circ} 10'$, or $59^{\circ} 50'$.



Hence, since by supposition the ship is somewhere in the neighbourhood of the dead reckoning position D, she is on the circle EBE' not far from E.

We lay off, then, on the chart, from D, a distance of 10', DE, called "**The Intercept,**" away from the bearing of the body (since the true altitude is smaller than the calculated altitude) and through E draw a perpendicular, which is the Position Line on which the ship was situated at the time the observation was taken, corresponding to that observation.

In the Tables we have the altitude calculated for each exact degree of Latitude, Declination, and Hour Angle.

In using the Tables, we do not calculate the altitude for the *dead reckoning* position of the ship, as this would usually necessitate three corrections to the altitude taken from the Tables, but **we calculate for the nearest exact degree of Latitude, and the nearest Longitude which will give us an Hour Angle which is an exact 4-minute interval.*** This we call the **Assumed Position** of the ship.

We can then take from the Tables an altitude which only requires to be corrected for odd minutes of Declination. We now take the Difference between the true altitude by observation and the corrected altitude from the Tables. We next lay off this Intercept on the chart from the "Assumed Position" towards, or away from, the heavenly body observed, as the true altitude is greater or less than the Table altitude, and through the point thus obtained we draw the Position Line at right angles to the true bearing.

We proceed to illustrate by means of examples:—

Example I.

At about 7^h 40^m A.M. the dead reckoning position was 16° 35' N., 62° 0' E. The Sun's true altitude by observation was 18° 57', G.M.T. 15^h 47^m 47^s, Declination S. 14° 18', Equation of Time, 14^m 25^s—to M.T. To determine the Position Line—

(1) Write down the G.M.T. and apply the equation of time.

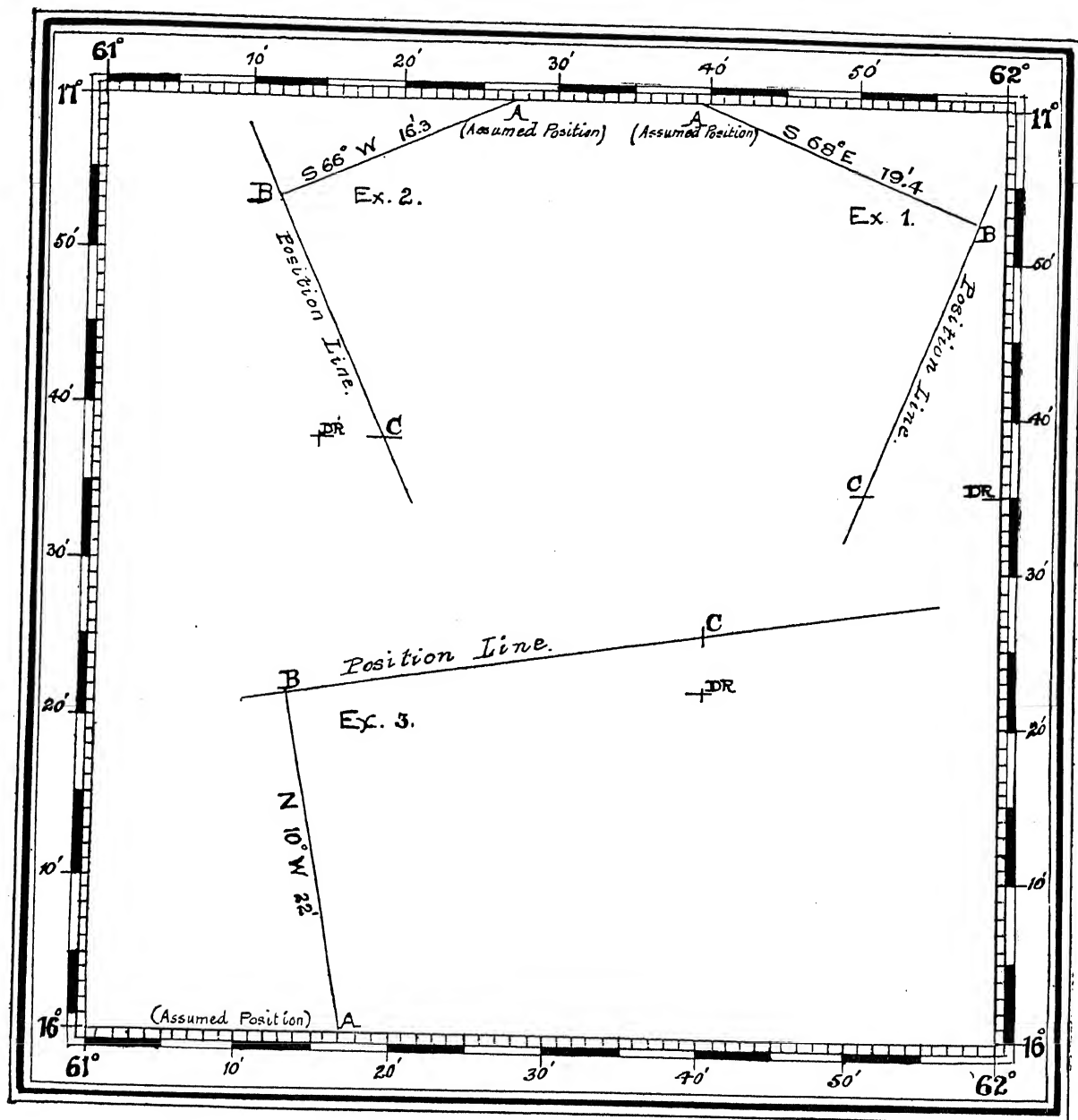
(2) Apply the D.R. Longitude, giving the Westerly Hour Angle on the D.R. meridian of 62° 0' E.

(3) Subtract 1^m 22^s to bring this to an exact four-minute interval, noting that **going west always diminishes the Westerly Hour Angle, while going east increases it**, and we have Assumed Longitude 61° 39' .5 E.

h.	m.	s.	
15	47	47	G.M.T.
	14	25	—
<hr/>			
15	33	22	G.A.T.
4	8	0	Long. 62° 0' E.
<hr/>			
19	41	22	A.T. in 62° 0' E.
	1	22	— = 20' .5 W.
<hr/>			
19	40	0	A.T. in 61° 39' .5 E.

(4) Enter Tables with Latitude 17° (nearest degree), Declination 14° (contrary name), Westerly Hour Angle 19^h 40^m, and we find Altitude 18° 44' .9.

* For example, if the D.R. Longitude were 4° 12' W. and corresponding Westerly Hour Angle 4^h 13^m 12^s, we should apply 1^m 12^s or 18' W. to the D.R. Longitude, giving us 4^h 13^m 12^s — 1^m 12^s or 4^h 12^m as our Westerly Hour Angle, and 4° 12' W. + 18', or 4° 30' W. as our Assumed Longitude.



The same entry, but with Declination 15° , gives Altitude $18^\circ 20' \cdot 6$.

The difference between them is $24' \cdot 3$.

(5) Enter Table III. with $24' \cdot 3$ as difference in altitude and $18'$ as difference in declination, and we get correction $7' \cdot 3$,* subtractive to $18^\circ 44' \cdot 9$, since required altitude must lie between the two altitudes taken out in (4). We thus get $18^\circ 37' \cdot 6$ as the calculated altitude for our Assumed Position $17^\circ 0' \text{ N.}$, $61^\circ 39' \cdot 5 \text{ E.}$

Table altitude	-	$18^\circ 44' \cdot 9$
Correction for $18'$	-	$7' \cdot 3$ —
Calculated altitude		$18^\circ 37' \cdot 6$
True altitude	-	$18^\circ 57'$
Intercept	- -	<u>$19' \cdot 4 \text{ S. } 68^\circ \text{ E.}$</u>

(6) Comparing with the true altitude $18^\circ 57'$, we find that the Intercept is $19' \cdot 4$ towards the Sun, since the true altitude is the greater.

(7) Look out the Azimuth for Latitude 17° , Declination 14° (contrary name), Westerly Hour Angle $19^h 40^m$ in Azimuth Tables, or as explained later, and we find the Azimuth $\text{S. } 68^\circ \text{ E.}$

(8) From the Assumed Position, $17^\circ 0' \text{ N. } 61^\circ 39' \cdot 5 \text{ E.}$ lay off the Intercept $19' \cdot 4 \text{ S. } 68^\circ \text{ E.}$ and draw through its extremity a perpendicular, which will be the required Position Line.

It is not, however, necessary to *protract* the Intercept in order to obtain the Position Line, as we can use the Traverse Table.

With $19' \cdot 4$ as Distance and 68° as Course, we have diff. lat. = $7' \cdot 3$, departure = $18' \cdot 0$, and diff. long. = $18' \cdot 8$.

Hence we have—

Assumed Position (A on chart)	$17^\circ 0' \text{ N.}$	$61^\circ 39' \cdot 5 \text{ E.}$
diff. lat.	$7' \cdot 3 \text{ S.}$	diff. long. $18' \cdot 8 \text{ E.}$
Foot of Intercept (B)	<u>$16^\circ 52' \cdot 7 \text{ N.}$</u>	<u>$61^\circ 58' \cdot 3 \text{ E.}$</u>

We can now, if we wish, determine, by means of Table VIII., the Longitude in which the Position Line cuts the dead reckoning parallel $16^\circ 35' \text{ N.}$

The Correction Factor for Latitude 17° , Azimuth 68° , is $\cdot 42$ and the diff. lat. between B and C is $17' \cdot 7$.

Therefore Longitude of C is $61^\circ 58' \cdot 3 \text{ E.} - (17' \cdot 7 \times \cdot 42)$ or $61^\circ 50' \cdot 9 \text{ E.}$

If as a check we work the sight with the given elements, using the D.R. Latitude, we get Longitude $61^\circ 50' \cdot 8 \text{ E.}$, which is in practical agreement with the result obtained by the Tables.

Example II.

The ship, by dead reckoning, was in $16^\circ 38' \text{ N. } 61^\circ 15' \text{ E.}$ when *Sirius* was observed at about $5^h 40^m \text{ A.M. G.M.T. } 13^h 35^m 4^s$: true altitude of *Sirius* $17^\circ 57' 30''$: R.A.M.S. $17^h 20^m 12^s$: R.A. *Sirius* $6^h 41^m 6^s$: Declination $\text{S. } 16^\circ 35' 30''$: true bearing of *Sirius* $\text{S. } 66^\circ \text{ W.}$ To determine the Position Line.

* Or, if greater accuracy is required, use Proportional Logs in Table IV.

h.	m.	s.	
13	35	4	G.M.T.
17	20	12	R.A.M.S.
<hr/>			
30	55	16	Sidereal time on meridian of Greenwich.
6	41	6	R.A. <i>Sirius</i> .
<hr/>			
0	14	10	Westerly Hour Angle on meridian of Greenwich.
4	5	0	Long. $61^{\circ} 15' \text{ E.}$
<hr/>			
4	19	10	Westerly Hour Angle on D.R. Meridian $61^{\circ} 15' \text{ E.}$
	0	50	+
<hr/>			
4	20	0	Westerly Hour Angle in Assumed Longitude $61^{\circ} 27' \cdot 5 \text{ E.}$

Enter Tables with Latitude 17° , Declination 16° contrary name, Westerly Hour Angle $4^{\text{h}} 20^{\text{m}}$, and we get Altitude $17^{\circ} 56' \cdot 0$, and with Declination 17° we get Altitude $17^{\circ} 31' \cdot 1$.

Difference of these Altitudes is $24' \cdot 9$ and odd minutes of Declination are $35' \cdot 5$. Correction from Table III. (or by proportional logarithms Table IV.) is $14' \cdot 8$ —

Calculated altitude is therefore $17^{\circ} 56' \cdot 0 - 14' \cdot 8$ or $- 17^{\circ} 41' \cdot 2$.

True altitude is $- 17^{\circ} 57' \cdot 5$.

Intercept $- - 16' \cdot 3 \text{ S. } 66^{\circ} \text{ W.}$

Assumed Position (A)	-	$17^{\circ} 0' \text{ N.}$	$61^{\circ} 27' \cdot 5 \text{ E.}$
- $16' \cdot 3 \text{ S. } 66^{\circ} \text{ W. diff. lat.}$		$6' \cdot 6 \text{ S.}$	diff. long. $15' \cdot 6 \text{ W.}$
Foot of Intercept (B) -	-	$16^{\circ} 53' \cdot 4 \text{ N.}$	$61^{\circ} 11' \cdot 9 \text{ E.}$

To determine the Longitude of C, the intersection of the Position Line and the parallel of D.R. Latitude $16^{\circ} 38' \text{ N.}$ —

The Correction Factor (Table VIII.) for Latitude 17° and Azimuth 66° is $\cdot 47$.

Difference of Latitude between B and C is $15' \cdot 4$.

Therefore Longitude of C is $61^{\circ} 11' \cdot 9 \text{ E.} + (15' \cdot 4 \times \cdot 47)$ or $61^{\circ} 19' \cdot 1 \text{ E.}$

If the sight is worked with the given elements, using the D.R. Latitude, we get Longitude $61^{\circ} 19' \text{ E.}$, agreeing with the result obtained by the Tables.

Example III.

The ship by dead reckoning, was in $16^{\circ} 22' \text{ N. } 61^{\circ} 40' \text{ E.}$ At about $11^{\text{h}} 40^{\text{m}} \text{ A.M.}$ the Sun's true altitude by observation was $51^{\circ} 28' \cdot 2$, G.M.T. $19^{\text{h}} 19^{\text{m}} 39^{\text{s}}$, Declination S. $21^{\circ} 42' 30''$, Equation of Time $11^{\text{m}} 13^{\text{s}} +$ to M.T.

To determine the Position Line—

h.	m.	s.	
19	19	39	G.M.T.
	11	13	+
<hr/>			
19	30	52	G.A.T.
4	6	40	Long. $61^{\circ} 40' \text{ E.}$
<hr/>			
23	37	32	A.T. on D.R. Meridian $61^{\circ} 40' \text{ E.}$
	1	32	- = $23' \text{ W.}$
<hr/>			
23	36	0	A.T. in Assumed Longitude $61^{\circ} 17' \text{ E.}$

Tables.—Latitude 16°, Declination 21°, W.H.A. 23 ^h 36 ^m , Altitude is 52° 32'·1 (A)			
Latitude 16°, Declination 22°, W.H.A. 23 ^h 36 ^m , Altitude is 51° 32'·9			
Difference	-	-	<u>59'·2</u>

Table III., Difference of altitude 59'·2 and Difference of declination 42'·5 gives correction to Altitude (A) 41'·9.

Calculated altitude is therefore 52° 32'·1 - 41'·9 or	-	51° 50'·2
True altitude is	-	<u>51° 28'·2</u>

True bearing being S. 10° E. (by Tables) Intercept is	-	<u>22' N. 10° W.</u>
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Assumed Position -	-	16° 0' N.		61° 17' E.
22' N. 10° W. diff. lat. -		<u>21'·7 N.</u>	diff. long. -	<u>4' W.</u>
Foot of Intercept (B) -	-	<u>16° 21'·7 N.</u>		<u>61° 13' E.</u>

Being near the meridian, we will determine the Latitude of C, the intersection of the Position Line and the D.R. meridian 61° 40' E.

The Correction Factor (Table VIII.) for Latitude 16° and Azimuth 10° is 6·57.

Difference of Longitude between B and C is 27'.

Therefore the Latitude of C is 16° 21'·7 N. + $\frac{27'}{6\cdot57}$ or 16° 25'·8 N.

To determine the Azimuth by the Tables.

(1) If the Altitude is less than 24° :—

(a) Latitude and Declination of the same name.

Enter Tables with Latitude and Altitude as Latitude and Declination of the same name and Declination as Altitude. The corresponding Hour Angle, converted into arc, will be the Azimuth, measured from the elevated Pole.

Example.—Latitude 22° N., Declination 7° N., Westerly Hour Angle 5^h 0^m.

The Altitude, by the Tables, is 16° 29'·3.

To determine the Azimuth, we look out 16° (nearest to 16° 29'·3) as Declination and we find the nearest Altitude to 7° is 6° 49'·4 opposite Hour Angle 5^h 56^m. Approximate Azimuth is therefore N. 89° W.

(b) Latitude and Declination of contrary names.

Enter Tables with Latitude and Altitude as Latitude and Declination of contrary names and Declination as Altitude. The corresponding Hour Angle, converted into arc, will be the Azimuth, of contrary name to the Latitude.

Example.—Latitude 22° N., Declination 7° S., Westerly Hour Angle 4^h 44^m.

The Altitude, by the Tables, is 14° 42'·6.

To determine the Azimuth, we look out 15° (nearest to 14° 42'·6) as Declination and we find the nearest Altitude to 7° is 6° 52'·5 opposite Hour Angle 5^h 4^m. Approximate Azimuth is therefore S. 76° W.

(2) If the Altitude is greater than 24° :—

- (a) Take the difference, in minutes of arc, between the Table Altitudes for the Hour Angles immediately preceding and following the Hour Angle being dealt with.

Add together the common logarithm of this number (Table V.) and the proportional logarithm of the Latitude (Table VI.A) and the sum is the L sine Azimuth (Table VI.B).

Example.—Latitude 25° N. Declination 22° S. Hour Angle $2^h 12^m$.

Altitude for Hour Angle $2^h 8^m$ is - $33^\circ 39'.8$

Altitude for Hour Angle $2^h 16^m$ is - $32^\circ 34'.2$

Difference = $65'.6$

log. $65'.6 = 1.8169$

Table VI.A Latitude $25^\circ = 7.9635$

Sum = 9.7804 = L sine Azimuth.

Therefore approximate Azimuth is S. 37° W. (Table VI.B).*

Caution.—This method should not be used when the bearing is within 10° of the Prime Vertical; consequently Table VI.B does not go beyond $79^\circ 30'$.

- (b) Take the Table Altitudes for given Declination and Hour Angle and Latitudes above and below the given Latitude. Their difference will give the Azimuth in Table VII.

Example.— Lat. 18° N., Dec. 21° N., Hour Angle $3^h 40^m$.

Altitude for Lat. 17° , Dec. 21° , Hour Angle $3^h 40^m$ is - $38^\circ 5'.2$

Altitude for Lat. 19° , Dec. 21° , Hour Angle $3^h 40^m$ is - $38^\circ 32'.0$

Difference = $26'.8$

Therefore by Table VII. the Azimuth is N. 77° W.

Caution.—This method should not be used when the bearing is within 10° of the meridian.

To determine the Name of the Azimuth in Method (2).

(i) Latitude and Declination of contrary names, Azimuth is always of contrary name to the Latitude.

(ii) Latitude and Declination of same name, and Declination greater than the Latitude, Azimuth is always of the same name as the Latitude.

(iii) Latitude and Declination of same name, and Latitude greater than the Declination:—

The time of crossing the Prime Vertical is indicated in the Tables by a thin line. Between upper meridian passage and this time the Latitude and Azimuth are of contrary names; on the other side of the line same names.

* Or by the Traverse Table. With distance 120 (constant) and latitude 25° as course take out diff. lat. 108.8 . With 108.8 as distance and diff. alts. 65.6 as departure take out azimuth 37° as course.

Latitude and Declination are interchangeable in using the Tables.

Consequently from Latitude 0° to 24° the Tables are available for stars from Declination 0° to 30° . For instance, the altitude of a body, the declination of which is 28° N. in latitude 10° S. is the same as that of a body whose declination is 10° S. in latitude 28° N., the hour angle being the same in both cases.

Example.—Required the Altitude of *Antares* (Declination S. $26^{\circ} 13' 5''$) in Latitude 12° N., when the Westerly Hour Angle is $4^h 12^m$.

Table Altitude for Lat. 26° , Dec. 12° , W.H.A. $4^h 12^m$ is	-	$17^{\circ} 56' 3''$
Table Altitude for Lat. 27° , Dec. 12° , W.H.A. $4^h 12^m$ is	-	$17^{\circ} 32' 1''$
Difference	-	<u>$24' 2''$</u>

Correction from Table III. or by proportional logarithms (Table IV.) for $13' 5''$ and $24' 2''$ is $5' 4''$.

Therefore the required Altitude of *Antares* is $17^{\circ} 56' 3'' - 5' 4''$ or $17^{\circ} 50' 9''$.

To determine the Azimuth in this case.

Enter the Tables with Altitude and Latitude as Latitude and Declination, and Declination as Altitude, then the Hour Angle will give the Azimuth.

Thus, in preceding example, we enter Tables with 18° as Latitude, 12° as Declination, and we find that the nearest Altitude to $26^{\circ} 13' 5''$ is $26^{\circ} 15' 5''$ which gives Hour Angle $3^h 48^m$ or 57° .

True bearing of *Antares* is therefore S. 57° W.

Or we can use methods 2(a) and 2(b) already given.

In the same example Lat. 26° , Dec. 12° , W.H.A. $4^h 8^m$, Altitude is	-	$18^{\circ} 45' 6''$
Lat. 26° , Dec. 12° , W.H.A. $4^h 16^m$, Altitude is	-	$17^{\circ} 6' 8''$
Difference	-	<u>$98' 8''$</u>

$$\text{Common log. } 98 \cdot 8 = 1 \cdot 9948$$

$$\text{Prop. log. Lat. } 12^{\circ} \text{ (Table VI.A)} = 7 \cdot 9304$$

$$\text{L sine Azimuth} = \underline{9 \cdot 9252}$$

$$\text{Azimuth} = \text{S. } 57^{\circ} \text{ W. approximately (Table VI.B).}^*$$

Again—

Lat. 26° , Dec. 11° , W.H.A. $4^h 12^m$, Altitude is	-	$18^{\circ} 28' 6''$
Lat. 26° , Dec. 13° , W.H.A. $4^h 12^m$, Altitude is	-	$17^{\circ} 23' 8''$
Difference	-	<u>$64' 8''$</u>

Therefore, by Table VII. the Azimuth is approximately S. 57° W.

* Or by Traverse Table. With distance 120 (constant) and latitude 12° as course look out diff. lat. $117 \cdot 4$. With $117 \cdot 4$ as distance and diff. alts. $98 \cdot 8$ as departure take out azimuth 57° as course.

**To determine the time of Daybreak, or end of Twilight,
by the Tables.**

Change the name of the Declination and determine the P.M. time when the Altitude is 18° . This gives the required time of Daybreak, and, subtracted from 12^h , gives the time when Twilight ends.

Example.—Latitude 28° N. Declination 22° S.

Enter Tables with Latitude 28° , Declination 22° same name, and we find that at $5^h 20^m$ the Altitude is $18^\circ 32' \cdot 6$ and at $5^h 24^m$ it is $17^\circ 41' \cdot 6$. Therefore it will be approximately 18° at $5^h 22^m$ P.M. Therefore time of daybreak is about $5^h 22^m$ A.M. and evening twilight ends at about $6^h 38^m$ P.M.

Use of Table of Proportional Logarithms (Table IV.).

Example I.—Required the altitude at $4^h 20^m$ in Latitude 17° N. when the Declination is S. $16^\circ 35' \cdot 7$.

Entering Tables with Lat. 17° , Dec. 16° (contrary name), H.A. }	$17^\circ 56' \cdot 0$
$4^h 20^m$, Altitude is - - - - - }	
Entering Tables with Lat. 17° , Dec. 17° (contrary name), H.A. }	$17^\circ 31' \cdot 1$
$4^h 20^m$, Altitude is - - - - - - }	
Difference in altitude for $60'$ Declination - -	<u><u>$24' \cdot 9$</u></u>

We require the difference in altitude for $35' \cdot 7$ Declination.

And

$$\begin{aligned} \text{Prop. log. required difference} &= \text{prop. log. } 24' \cdot 9 + \text{prop. log. } 35' \cdot 7. \\ &= \cdot 382 + \cdot 226. \\ &= \cdot 608. \end{aligned}$$

$$\text{therefore required difference} = 14' \cdot 8.$$

$$\text{And required altitude is } 17^\circ 56' \cdot 0 - 14' \cdot 8 \text{ or } 17^\circ 41' \cdot 2.$$

Example II.—Required the hour angle when the altitude is $22^\circ 0'$ in Latitude 23° N., the Declination being 8° N.

Entering Tables with given Latitude and Declination, we find that the given altitude lies between $22^\circ 23' \cdot 9$ at $4^h 36^m$ and $21^\circ 28' \cdot 7$ at $4^h 40^m$.

$$\text{We have } 22^\circ 23' \cdot 9 - 22^\circ 0' = 23' \cdot 9 \text{ prop. log.} = \cdot 400$$

$$\text{And } 22^\circ 23' \cdot 9 - 21^\circ 28' \cdot 7 = 55' \cdot 2 \text{ prop. log.} = \cdot 036$$

$$\text{Prop. log. time correction} = \text{difference } \cdot 364$$

$$\text{therefore time correction} = 1^m 44^s.$$

$$\text{And required time is } 4^h 36^m + 1^m 44^s \text{ or } 4^h 37^m 44^s.$$

N.B.—This method would not be correct near the meridian, when the altitude in 4^m does not change proportionally to the time.

Example III.—In Latitude $21^{\circ} 55'$ N. the Declination was S. $20^{\circ} 39' \cdot 5$ and True Altitude $24^{\circ} 18' \cdot 0$. Required the Hour Angle.

Entering Tables—

Lat. 21° , Dec. 20° , Hour Angle, $3^{\text{h}} 24^{\text{m}}$, we have Altitude - $25^{\circ} 26' \cdot 2$ (A.)

Lat. 21° , Dec. 21° , Hour Angle, $3^{\text{h}} 24^{\text{m}}$, we have Altitude - $24^{\circ} 50' \cdot 4$ (B.)

Lat. 21° , Dec. 20° , Hour Angle, $3^{\text{h}} 28^{\text{m}}$, we have Altitude - $24^{\circ} 40' \cdot 7$ (C.)

Lat. 22° , Dec. 20° , Hour Angle, $3^{\text{h}} 24^{\text{m}}$, we have Altitude - $24^{\circ} 50' \cdot 8$ (D.)

A - D = $35' \cdot 4$, prop. log. = $\cdot 229$ A - B = $35' \cdot 8$, prop. log. = $\cdot 224$

Diff. lat. = $55' \cdot 0$, prop. log. = $\cdot 038$ Diff. dec. = $39' \cdot 5$, prop. log. = $\cdot 182$

Sum - - = $\cdot 267$

Sum - - = $\cdot 406$

Correction to A for Lat. = $32' \cdot 4$ - Correction to A for Dec. = $23' \cdot 5$ -

Therefore, with given Latitude and Declination, the Altitude at $3^{\text{h}} 24^{\text{m}}$ H.A.
is $25^{\circ} 26' \cdot 2 - 32' \cdot 4 - 23' \cdot 5$ or $24^{\circ} 30' \cdot 3$ - - - - - (E.)

A - C = $45' \cdot 5$ change of Altitude in 4^{m} .

E - given Altitude = $12' \cdot 3$.

Prop. log. $12' \cdot 3$ = $\cdot 688$

Prop. log. $45' \cdot 5$ = $\cdot 120$

Difference - = $\cdot 568$

Hour Angle correction = $1^{\text{m}} 4^{\text{s}} \cdot 8$.

Therefore required Hour Angle is $3^{\text{h}} 24^{\text{m}} + 1^{\text{m}} 4^{\text{s}} \cdot 8$ or $3^{\text{h}} 25^{\text{m}} 4^{\text{s}} \cdot 8$.

N.B.—The *accurate* value of the Hour Angle is $3^{\text{h}} 25^{\text{m}} 3^{\text{s}}$.

To determine a Lunar Distance by the Tables.

(a) If the Lunar Distance is less than 90° :—

Look out one Declination as Latitude and the other as Declination, with the difference of Right Ascensions as Hour Angle. The Lunar Distance required will be 90° —the Altitude obtained from the Tables.

(b) If the Lunar Distance is greater than 90° :—

Change the Name of one Declination and take 12^h — difference of Right Ascensions as Hour Angle. The resulting Altitude $+ 90^\circ$ will be the Lunar Distance required.

Example.—Required the Lunar Distance of *Antares* (R.A. $16^h 23^m 0^s$, Declination S. $26^\circ 12' 2''$) the R.A. and Declination of the Moon being $21^h 57^m 25^s$, S. $14^\circ 2' 1''$.

The difference of Right Ascensions is $5^h 34^m 25^s$.

Tables, Lat. 26° , Dec. 14° , Hour Angle, $5^h 32^m$, give Alt.	-	$12^\circ 15' 6$ (A.)
„ Lat. 26° , Dec. 15° , Hour Angle, $5^h 32^m$, give Alt.	-	$12^\circ 40' 0$ (B.)
„ Lat. 26° , Dec. 14° , Hour Angle, $5^h 36^m$, give Alt.	-	$11^\circ 22' 5$ (C.)
„ Lat. 27° , Dec. 14° , Hour Angle, $5^h 32^m$, give Alt.	-	$12^\circ 25' 6$ (D.)

A ~ B = $24' 4$, prop. log. = $\cdot 391$	A ~ D = $10' 0$, prop. log. = $\cdot 778$
Diff. dec. = $2' 1$, prop. log. = $1 \cdot 456$	Diff. dec. = $12' 2$, prop. log. = $\cdot 692$
Sum = $1 \cdot 847$	Sum = $1 \cdot 470$

Correction to A = $\cdot 85 +$

Correction to A = $2' 05 +$

A - C = $53' 1$, prop. log. = $\cdot 053$
Diff. Hour Angle = $2^m 25^s$, prop. log. = $\cdot 219$
Sum = $\cdot 272$

Correction to A = $32' 1 -$

A = $12^\circ 15' 6$	<i>Corrections.</i>
Combined corrections = $29' 2 -$	+ -
$11^\circ 46' 4$	$\cdot 85$ $32 \cdot 1$
90°	$2 \cdot 05$
	Sum = $2 \cdot 9$
Lunar Distance required $78^\circ 13' 6$	

TABLE I.
Arc and Time Equivalents.

°	H. M.	°	H. M.	°	H. M.
/	M. S.				
1	0 4	61	4 4	121	8 4
2	0 8	62	4 8	122	8 8
3	0 12	63	4 12	123	8 12
4	0 16	64	4 16	124	8 16
5	0 20	65	4 20	125	8 20
6	0 24	66	4 24	126	8 24
7	0 28	67	4 28	127	8 28
8	0 32	68	4 32	128	8 32
9	0 36	69	4 36	129	8 36
10	0 40	70	4 40	130	8 40
11	0 44	71	4 44	131	8 44
12	0 48	72	4 48	132	8 48
13	0 52	73	4 52	133	8 52
14	0 56	74	4 56	134	8 56
15	1 0	75	5 0	135	9 0
16	1 4	76	5 4	136	9 4
17	1 8	77	5 8	137	9 8
18	1 12	78	5 12	138	9 12
19	1 16	79	5 16	139	9 16
20	1 20	80	5 20	140	9 20
21	1 24	81	5 24	141	9 24
22	1 28	82	5 28	142	9 28
23	1 32	83	5 32	143	9 32
24	1 36	84	5 36	144	9 36
25	1 40	85	5 40	145	9 40
26	1 44	86	5 44	146	9 44
27	1 48	87	5 48	147	9 48
28	1 52	88	5 52	148	9 52
29	1 56	89	5 56	149	9 56
30	2 0	90	6 0	150	10 0
31	2 4	91	6 4	151	10 4
32	2 8	92	6 8	152	10 8
33	2 12	93	6 12	153	10 12
34	2 16	94	6 16	154	10 16
35	2 20	95	6 20	155	10 20
36	2 24	96	6 24	156	10 24
37	2 28	97	6 28	157	10 28
38	2 32	98	6 32	158	10 32
39	2 36	99	6 36	159	10 36
40	2 40	100	6 40	160	10 40
41	2 44	101	6 44	161	10 44
42	2 48	102	6 48	162	10 48
43	2 52	103	6 52	163	10 52
44	2 56	104	6 56	164	10 56
45	3 0	105	7 0	165	11 0
46	3 4	106	7 4	166	11 4
47	3 8	107	7 8	167	11 8
48	3 12	108	7 12	168	11 12
49	3 16	109	7 16	169	11 16
50	3 20	110	7 20	170	11 20
51	3 24	111	7 24	171	11 24
52	3 28	112	7 28	172	11 28
53	3 32	113	7 32	173	11 32
54	3 36	114	7 36	174	11 36
55	3 40	115	7 40	175	11 40
56	3 44	116	7 44	176	11 44
57	3 48	117	7 48	177	11 48
58	3 52	118	7 52	178	11 52
59	3 56	119	7 56	179	11 56
60	4 0	120	8 0	180	12 0

TABLE II.
Time and Arc Equivalents.

M. S.	/ //	M. S.	/ //
#			
0 1	0 15	1 1	15 15
0 2	0 30	1 2	15 30
0 3	0 45	1 3	15 45
0 4	1 0	1 4	16 0
0 5	1 15	1 5	16 15
0 6	1 30	1 6	16 30
0 7	1 45	1 7	16 45
0 8	2 0	1 8	17 0
0 9	2 15	1 9	17 15
0 10	2 30	1 10	17 30
0 11	2 45	1 11	17 45
0 12	3 0	1 12	18 0
0 13	3 15	1 13	18 15
0 14	3 30	1 14	18 30
0 15	3 45	1 15	18 45
0 16	4 0	1 16	19 0
0 17	4 15	1 17	19 15
0 18	4 30	1 18	19 30
0 19	4 45	1 19	19 45
0 20	5 0	1 20	20 0
0 21	5 15	1 21	20 15
0 22	5 30	1 22	20 30
0 23	5 45	1 23	20 45
0 24	6 0	1 24	21 0
0 25	6 15	1 25	21 15
0 26	6 30	1 26	21 30
0 27	6 45	1 27	21 45
0 28	7 0	1 28	22 0
0 29	7 15	1 29	22 15
0 30	7 30	1 30	22 30
0 31	7 45	1 31	22 45
0 32	8 0	1 32	23 0
0 33	8 15	1 33	23 15
0 34	8 30	1 34	23 30
0 35	8 45	1 35	23 45
0 36	9 0	1 36	24 0
0 37	9 15	1 37	24 15
0 38	9 30	1 38	24 30
0 39	9 45	1 39	24 45
0 40	10 0	1 40	25 0
0 41	10 15	1 41	25 15
0 42	10 30	1 42	25 30
0 43	10 45	1 43	25 45
0 44	11 0	1 44	26 0
0 45	11 15	1 45	26 15
0 46	11 30	1 46	26 30
0 47	11 45	1 47	26 45
0 48	12 0	1 48	27 0
0 49	12 15	1 49	27 15
0 50	12 30	1 50	27 30
0 51	12 45	1 51	27 45
0 52	13 0	1 52	28 0
0 53	13 15	1 53	28 15
0 54	13 30	1 54	28 30
0 55	13 45	1 55	28 45
0 56	14 0	1 56	29 0
0 57	14 15	1 57	29 15
0 58	14 30	1 58	29 30
0 59	14 45	1 59	29 45
1 0	15 0	2 0	30 0

TABLE III.

Diff. in Altitude. /	Difference in Declination.														
	'5	1'	1'·5	2'	2'·5	3'	3'·5	4'	4'·5	5'	5'·5	6'	6'·5	7'	7'·5
1	0	0	0	0	·0	·1	·1	·1	·1	·1	·1	·1	·1	·1	·1
2	0	0	·1	·1	·1	·1	·1	·1	·1	·2	·2	·2	·2	·2	·3
3	0	·1	·1	*1	·1	·2	·2	·2	·2	·3	·3	·3	·3	·4	·4
4	0	·1	·1	·1	·2	·2	·2	·3	·3	·3	·4	·4	·4	·5	·5
5	0	·1	·1	·2	·2	·3	·3	·3	·4	·4	·5	·5	·5	·6	·6
6	·1	·1	·2	·2	·3	·3	·4	·4	·5	·5	·6	·6	·7	·7	·8
7	·1	·1	·2	·2	·3	·4	·4	·5	·5	·6	·6	·7	·8	·8	·9
8	·1	·1	·2	·3	·3	·4	·5	·5	·6	·7	·7	·8	·9	·9	1·0
9	·1	·2	·2	·3	·4	·5	·5	·6	·7	·8	·8	·9	1·0	1·1	1·1
10	·1	·2	·3	·3	·4	·5	·6	·7	·8	·8	·9	1·0	1·1	1·2	1·3
11	·1	·2	·3	·4	·5	·6	·6	·7	·8	·9	1·0	1·1	1·2	1·3	1·4
12	·1	·2	·3	·4	·5	·6	·7	·8	·9	1·0	1·1	1·2	1·3	1·4	1·5
13	·1	·2	·3	·4	·5	·7	·8	·9	1·0	1·1	1·2	1·3	1·4	1·5	1·6
14	·1	·2	·4	·5	·6	·7	·8	·9	1·1	1·2	1·3	1·4	1·5	1·6	1·8
15	·1	·2	·4	·5	·6	·8	·9	1·0	1·1	1·3	1·4	1·5	1·6	1·8	1·9
16	·1	·3	·4	·5	·7	·8	·9	1·1	1·2	1·3	1·5	1·6	1·7	1·9	2·0
17	·1	·3	·4	·6	·7	·9	1·0	1·1	1·3	1·4	1·6	1·7	1·9	2·0	2·1
18	·2	·3	·5	·6	·8	·9	1·1	1·2	1·4	1·5	1·7	1·8	2·0	2·1	2·3
19	·2	·3	·5	·6	·8	1·0	1·1	1·3	1·4	1·6	1·8	1·9	2·1	2·2	2·4
20	·2	·3	·5	·7	·8	1·0	1·2	1·3	1·5	1·7	1·8	2·0	2·2	2·3	2·5
21	·2	·3	·5	·7	·9	1·1	1·2	1·4	1·6	1·8	1·9	2·1	2·3	2·5	2·6
22	·2	·4	·6	·7	·9	1·1	1·3	1·5	1·7	1·9	2·0	2·2	2·4	2·6	2·8
23	·2	·4	·6	·8	1·0	1·2	1·4	1·5	1·7	1·9	2·1	2·3	2·5	2·7	2·9
24	·2	·4	·6	·8	1·0	1·2	1·4	1·6	1·8	2·0	2·2	2·4	2·6	2·8	3·0
25	·2	·4	·6	·8	1·1	1·3	1·5	1·7	1·9	2·1	2·3	2·5	2·7	2·9	3·1
26	·2	·4	·7	·9	1·1	1·3	1·5	1·7	2·0	2·2	2·4	2·6	2·8	3·1	3·3
27	·2	·4	·7	·9	1·1	1·4	1·6	1·8	2·0	2·3	2·5	2·7	2·9	3·2	3·4
28	·2	·5	·7	·9	1·2	1·4	1·6	1·9	2·1	2·4	2·6	2·8	3·1	3·3	3·5
29	·2	·5	·7	1·0	1·2	1·5	1·7	1·9	2·2	2·4	2·7	2·9	3·2	3·4	3·6
30	·3	·5	·8	1·0	1·3	1·5	1·8	2·0	2·3	2·5	2·8	3·0	3·3	3·5	3·8
31	·3	·5	·8	1·0	1·3	1·6	1·8	2·1	2·3	2·6	2·9	3·1	3·4	3·6	3·9
32	·3	·5	·8	1·1	1·3	1·6	1·9	2·2	2·4	2·7	3·0	3·2	3·5	3·8	4·0
33	·3	·5	·8	1·1	1·4	1·7	1·9	2·2	2·5	2·8	3·1	3·3	3·6	3·9	4·1
34	·3	·6	·9	1·1	1·4	1·7	2·0	2·3	2·6	2·9	3·1	3·4	3·7	4·0	4·3
35	·3	·6	·9	1·2	1·5	1·8	2·1	2·4	2·6	2·9	3·2	3·5	3·8	4·1	4·4
36	·3	·6	·9	1·2	1·5	1·8	2·1	2·4	2·7	3·0	3·3	3·6	3·9	4·2	4·5
37	·3	·6	·9	1·2	1·6	1·9	2·2	2·5	2·8	3·1	3·4	3·7	4·0	4·3	4·6
38	·3	·6	1·0	1·3	1·6	1·9	2·2	2·6	2·9	3·2	3·5	3·8	4·1	4·5	4·8
39	·3	·6	1·0	1·3	1·6	2·0	2·3	2·6	3·0	3·3	3·6	3·9	4·3	4·6	4·9
40	·3	·7	1·0	1·3	1·7	2·0	2·4	2·7	3·0	3·4	3·7	4·0	4·4	4·7	5·0
41	·3	·7	1·0	1·4	1·7	2·1	2·4	2·8	3·1	3·5	3·8	4·1	4·5	4·8	5·1
42	·4	·7	1·1	1·4	1·8	2·1	2·5	2·8	3·2	3·5	3·9	4·2	4·6	4·9	5·3
43	·4	·7	1·1	1·4	1·8	2·2	2·5	2·9	3·3	3·6	4·0	4·3	4·7	5·0	5·4
44	·4	·7	1·1	1·5	1·9	2·2	2·6	3·0	3·3	3·7	4·1	4·4	4·8	5·2	5·5
45	·4	·7	1·1	1·5	1·9	2·3	2·7	3·0	3·4	3·8	4·2	4·5	4·9	5·3	5·6
46	·4	·8	1·2	1·6	1·9	2·3	2·7	3·1	3·5	3·9	4·3	4·6	5·0	5·4	5·8
47	·4	·8	1·2	1·6	2·0	2·4	2·8	3·2	3·6	4·0	4·3	4·7	5·1	5·5	5·9
48	·4	·8	1·2	1·6	2·0	2·4	2·8	3·2	3·6	4·0	4·4	4·8	5·2	5·6	6·0
49	·4	·8	1·2	1·6	2·1	2·5	2·9	3·3	3·7	4·1	4·5	4·9	5·3	5·7	6·1
50	·4	·8	1·3	1·7	2·1	2·5	2·9	3·4	3·8	4·2	4·6	5·0	5·5	5·9	6·3
51	·4	·8	1·3	1·7	2·1	2·6	3·0	3·4	3·9	4·3	4·7	5·1	5·6	6·0	6·4
52	·4	·9	1·3	1·8	2·2	2·6	3·1	3·5	3·9	4·4	4·8	5·2	5·7	6·1	6·5
53	·4	·9	1·3	1·8	2·2	2·7	3·1	3·6	4·0	4·5	4·9	5·3	5·8	6·2	6·7
54	·5	·9	1·4	1·8	2·3	2·7	3·2	3·6	4·1	4·5	4·9	5·4	5·9	6·3	6·8
55	·5	·9	1·4	1·9	2·3	2·8	3·2	3·7	4·2	4·6	5·0	5·5	6·0	6·5	6·9
56	·5	·9	1·4	1·9	2·4	2·8	3·3	3·8	4·2	4·7	5·1	5·6	6·1	6·6	7·0
57	·5	·9	1·4	1·9	2·4	2·9	3·4	3·8	4·3	4·8	5·2	5·7	6·2	6·7	7·2
58	·5	1·0	1·5	2·0	2·4	2·9	3·4	3·9	4·4	4·9	5·3	5·8	6·3	6·8	7·3
59	·5	1·0	1·5	2·0	2·5	3·0	3·5	4·0	4·5	5·0	5·4	5·9	6·4	6·9	7·4
60	·5	1·0	1·5	2·0	2·5	3·0	3·5	4·0	4·5	5·0	5·5	6·0	6·5	7·0	7·5

TABLE III.—*continued.*

Diff. in Altitude. /	Difference in Declination.														
	8'	8'.5	9'	9'.5	10'	10'.5	11'	11'.5	12'	12'.5	13'	13'.5	14'	14'.5	15'
1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
2	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5
3	.4	.4	.5	.5	.5	.5	.6	.6	.6	.6	.6	.7	.7	.7	.7
4	.5	.6	.6	.6	.7	.7	.7	.8	.8	.8	.9	.9	.9	1.0	1.0
5	.7	.7	.8	.8	.8	.9	.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2
6	.8	.9	.9	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5
7	.9	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7	1.7
8	1.1	1.1	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.9	1.9	2.0
9	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.9	2.0	2.0	2.1	2.2	2.2
10	1.3	1.4	1.5	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.5
11	1.5	1.6	1.7	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.7
12	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
13	1.7	1.8	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2
14	1.9	2.0	2.1	2.2	2.3	2.5	2.6	2.7	2.8	2.9	3.0	3.2	3.3	3.4	3.5
15	2.0	2.1	2.3	2.4	2.5	2.6	2.8	2.9	3.0	3.1	3.2	3.4	3.5	3.6	3.7
16	2.1	2.3	2.4	2.5	2.7	2.8	2.9	3.1	3.2	3.3	3.5	3.6	3.7	3.9	4.0
17	2.3	2.4	2.6	2.7	2.8	3.0	3.1	3.3	3.4	3.5	3.7	3.8	4.0	4.1	4.2
18	2.4	2.6	2.7	2.8	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.5
19	2.5	2.7	2.9	3.0	3.2	3.3	3.5	3.6	3.8	4.0	4.1	4.3	4.4	4.6	4.7
20	2.7	2.8	3.0	3.2	3.3	3.5	3.7	3.8	4.0	4.2	4.3	4.5	4.7	4.8	5.0
21	2.8	3.0	3.2	3.3	3.5	3.7	3.9	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.2
22	2.9	3.1	3.3	3.5	3.7	3.9	4.0	4.2	4.4	4.6	4.8	5.0	5.1	5.3	5.5
23	3.1	3.3	3.5	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.7
24	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0
25	3.3	3.5	3.8	3.9	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2
26	3.5	3.7	3.9	4.1	4.3	4.6	4.8	5.0	5.2	5.4	5.6	5.9	6.1	6.3	6.5
27	3.6	3.8	4.1	4.3	4.5	4.7	5.0	5.2	5.4	5.6	5.8	6.1	6.3	6.5	6.7
28	3.7	4.0	4.2	4.4	4.7	4.9	5.1	5.4	5.6	5.8	6.1	6.3	6.5	6.8	7.0
29	3.9	4.1	4.4	4.6	4.8	5.1	5.3	5.6	5.8	6.1	6.3	6.5	6.8	7.0	7.2
30	4.0	4.3	4.5	4.8	5.0	5.3	5.5	5.8	6.0	6.3	6.5	6.8	7.0	7.3	7.5
31	4.1	4.4	4.7	4.9	5.2	5.4	5.7	5.9	6.2	6.5	6.7	7.0	7.2	7.5	7.7
32	4.3	4.5	4.8	5.1	5.3	5.6	5.9	6.1	6.4	6.7	6.9	7.2	7.5	7.8	8.0
33	4.4	4.7	5.0	5.2	5.5	5.8	6.1	6.3	6.6	6.9	7.1	7.4	7.7	8.0	8.2
34	4.5	4.8	5.1	5.4	5.7	6.0	6.2	6.5	6.8	7.1	7.4	7.7	7.9	8.2	8.5
35	4.7	5.0	5.3	5.5	5.8	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.7
36	4.8	5.1	5.4	5.7	6.0	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0
37	4.9	5.2	5.6	5.9	6.2	6.5	6.8	7.1	7.4	7.7	8.0	8.3	8.6	9.0	9.2
38	5.1	5.4	5.7	6.0	6.3	6.7	7.0	7.3	7.6	7.9	8.2	8.6	8.9	9.2	9.5
39	5.2	5.5	5.9	6.2	6.5	6.8	7.2	7.5	7.8	8.1	8.4	8.8	9.1	9.5	9.7
40	5.3	5.7	6.0	6.3	6.7	7.0	7.3	7.7	8.0	8.3	8.7	9.0	9.3	9.7	10.0
41	5.5	5.8	6.2	6.5	6.8	7.2	7.5	7.9	8.2	8.6	8.9	9.2	9.6	9.9	10.2
42	5.6	6.0	6.3	6.6	7.0	7.4	7.7	8.1	8.4	8.8	9.1	9.5	9.8	10.2	10.5
43	5.7	6.1	6.5	6.8	7.2	7.5	7.9	8.2	8.6	9.0	9.3	9.7	10.0	10.4	10.7
44	5.9	6.2	6.6	6.9	7.3	7.7	8.1	8.4	8.8	9.2	9.5	9.9	10.3	10.7	11.0
45	6.0	6.4	6.8	7.1	7.5	7.9	8.3	8.6	9.0	9.4	9.7	10.1	10.5	10.9	11.2
46	6.1	6.5	6.9	7.3	7.7	8.1	8.4	8.8	9.2	9.6	10.0	10.4	10.7	11.2	11.5
47	6.3	6.7	7.1	7.4	7.8	8.2	8.6	9.0	9.4	9.8	10.2	10.6	11.0	11.4	11.7
48	6.4	6.8	7.2	7.6	8.0	8.4	8.8	9.2	9.6	10.0	10.4	10.8	11.2	11.6	12.0
49	6.5	6.9	7.4	7.7	8.2	8.6	9.0	9.4	9.8	10.2	10.6	11.0	11.4	11.9	12.2
50	6.7	7.1	7.5	7.9	8.3	8.8	9.2	9.6	10.0	10.4	10.8	11.3	11.7	12.1	12.5
51	6.8	7.2	7.7	8.1	8.5	8.9	9.4	9.8	10.2	10.6	11.0	11.5	11.9	12.3	12.7
52	6.9	7.4	7.8	8.2	8.7	9.1	9.5	10.0	10.4	10.8	11.2	11.7	12.1	12.6	13.0
53	7.1	7.5	8.0	8.4	8.8	9.3	9.7	10.2	10.6	11.1	11.5	11.9	12.4	12.8	13.2
54	7.2	7.7	8.1	8.5	9.0	9.5	9.9	10.4	10.8	11.3	11.7	12.2	12.6	13.1	13.5
55	7.3	7.8	8.3	8.7	9.2	9.6	10.1	10.5	11.0	11.5	11.9	12.4	12.8	13.3	13.7
56	7.4	7.9	8.4	8.8	9.3	9.8	10.3	10.7	11.2	11.7	12.1	12.6	13.1	13.6	14.0
57	7.6	8.1	8.6	9.0	9.5	10.0	10.5	10.9	11.4	11.9	12.3	12.8	13.3	13.8	14.2
58	7.7	8.2	8.7	9.2	9.7	10.2	10.6	11.1	11.6	12.1	12.6	13.1	13.5	14.0	14.5
59	7.9	8.4	8.9	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.7
60	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0

TABLE III.—*continued.*

Diff. in Altitude. /	Difference in Declination.														
	15'·5	16'	16'·5	17'	17'·5	18'	18'·5	19'	19'·5	20'	20'·5	21'	21'·5	22'	22'·5
1	·3	·3	·3	·3	·3	·3	·3	·3	·3	·3	·3	·4	·4	·4	·4
2	·5	·5	·5	·6	·6	·6	·6	·6	·7	·7	·7	·7	·7	·7	·8
3	·8	·8	·8	·9	·9	·9	·9	1·0	1·0	1·0	1·0	1·1	1·1	1·1	1·1
4	1·0	1·1	1·1	1·1	1·2	1·2	1·2	1·3	1·3	1·3	1·4	1·4	1·4	1·5	1·5
5	1·3	1·3	1·4	1·4	1·5	1·5	1·5	1·6	1·6	1·7	1·7	1·8	1·8	1·8	1·9
6	1·6	1·6	1·7	1·7	1·8	1·8	1·9	1·9	2·0	2·0	2·1	2·1	2·2	2·2	2·3
7	1·8	1·9	1·9	2·0	2·0	2·1	2·2	2·2	2·3	2·3	2·4	2·5	2·5	2·6	2·6
8	2·1	2·1	2·2	2·3	2·3	2·4	2·5	2·5	2·6	2·7	2·7	2·8	2·9	2·9	3·0
9	2·3	2·4	2·5	2·6	2·6	2·7	2·8	2·9	2·9	3·0	3·1	3·2	3·2	3·3	3·4
10	2·6	2·7	2·8	2·8	2·9	3·0	3·1	3·2	3·3	3·3	3·4	3·5	3·6	3·7	3·8
11	2·8	2·9	3·0	3·1	3·2	3·3	3·4	3·5	3·6	3·7	3·8	3·9	3·9	4·0	4·1
12	3·1	3·2	3·3	3·4	3·5	3·6	3·7	3·8	3·9	4·0	4·1	4·2	4·3	4·4	4·5
13	3·4	3·5	3·6	3·7	3·8	3·9	4·0	4·1	4·2	4·3	4·4	4·6	4·7	4·8	4·9
14	3·6	3·7	3·8	4·0	4·1	4·2	4·3	4·4	4·6	4·7	4·8	4·9	5·0	5·1	5·3
15	3·9	4·0	4·1	4·3	4·4	4·5	4·6	4·8	4·9	5·0	5·1	5·3	5·4	5·5	5·6
16	4·1	4·3	4·4	4·5	4·7	4·8	4·9	5·1	5·2	5·3	5·5	5·6	5·7	5·9	6·0
17	4·4	4·5	4·7	4·8	5·0	5·1	5·2	5·4	5·5	5·7	5·8	6·0	6·1	6·2	6·4
18	4·7	4·8	4·9	5·1	5·3	5·4	5·6	5·7	5·9	6·0	6·2	6·3	6·5	6·6	6·8
19	4·9	5·1	5·2	5·4	5·5	5·7	5·9	6·0	6·2	6·3	6·5	6·7	6·8	7·0	7·1
20	5·2	5·3	5·5	5·7	5·8	6·0	6·2	6·3	6·5	6·7	6·8	7·0	7·2	7·3	7·5
21	5·4	5·6	5·8	6·0	6·1	6·3	6·5	6·7	6·8	7·0	7·2	7·4	7·5	7·7	7·9
22	5·7	5·9	6·0	6·2	6·4	6·6	6·8	7·0	7·2	7·3	7·5	7·7	7·9	8·1	8·3
23	5·9	6·1	6·3	6·5	6·7	6·9	7·1	7·3	7·5	7·7	7·9	8·1	8·2	8·4	8·6
24	6·2	6·4	6·6	6·8	7·0	7·2	7·4	7·6	7·8	8·0	8·2	8·4	8·6	8·8	9·0
25	6·5	6·7	6·9	7·1	7·3	7·5	7·7	7·9	8·1	8·3	8·5	8·8	9·0	9·2	9·4
26	6·7	6·9	7·1	7·4	7·6	7·8	8·0	8·2	8·5	8·7	8·9	9·1	9·3	9·5	9·8
27	7·0	7·2	7·4	7·7	7·9	8·1	8·3	8·6	8·8	9·0	9·2	9·5	9·7	9·9	10·1
28	7·2	7·5	7·7	7·9	8·2	8·4	8·6	8·9	9·1	9·3	9·6	9·8	10·0	10·3	10·5
29	7·5	7·7	8·0	8·2	8·5	8·7	8·9	9·2	9·4	9·7	9·9	10·2	10·4	10·6	10·9
30	7·8	8·0	8·3	8·5	8·8	9·0	9·3	9·5	9·8	10·0	10·3	10·5	10·8	11·0	11·3
31	8·0	8·3	8·5	8·8	9·0	9·3	9·6	9·8	10·1	10·3	10·6	10·9	11·1	11·4	11·6
32	8·3	8·5	8·8	9·1	9·3	9·6	9·9	10·1	10·4	10·7	10·9	11·2	11·5	11·7	12·0
33	8·5	8·8	9·1	9·4	9·6	9·9	10·2	10·5	10·7	11·0	11·3	11·6	11·8	12·1	12·4
34	8·8	9·1	9·3	9·6	9·9	10·2	10·5	10·8	11·1	11·3	11·6	11·9	12·2	12·5	12·8
35	9·0	9·3	9·6	9·9	10·2	10·5	10·8	11·1	11·4	11·7	12·0	12·3	12·5	12·8	13·1
36	9·3	9·6	9·9	10·2	10·5	10·8	11·1	11·4	11·7	12·0	12·3	12·6	12·9	13·2	13·5
37	9·6	9·9	10·2	10·5	10·8	11·1	11·4	11·7	12·0	12·3	12·6	13·0	13·3	13·6	13·9
38	9·8	10·1	10·4	10·8	11·1	11·4	11·7	12·0	12·4	12·7	13·0	13·3	13·6	13·9	14·3
39	10·1	10·4	10·7	11·1	11·4	11·7	12·0	12·4	12·7	13·0	13·3	13·7	14·0	14·3	14·6
40	10·3	10·7	11·0	11·3	11·7	12·0	12·3	12·7	13·0	13·3	13·7	14·0	14·3	14·7	15·0
41	10·6	10·9	11·3	11·6	12·0	12·3	12·6	13·0	13·3	13·7	14·0	14·4	14·7	15·0	15·4
42	10·9	11·2	11·5	11·9	12·3	12·6	13·0	13·3	13·7	14·0	14·4	14·7	15·1	15·4	15·8
43	11·1	11·5	11·8	12·2	12·5	12·9	13·3	13·6	14·0	14·3	14·7	15·1	15·4	15·8	16·1
44	11·4	11·7	12·1	12·5	12·8	13·2	13·6	13·9	14·3	14·7	15·0	15·4	15·8	16·1	16·5
45	11·6	12·0	12·4	12·8	13·1	13·5	13·9	14·3	14·6	15·0	15·4	15·8	16·1	16·5	16·9
46	11·9	12·3	12·6	13·0	13·4	13·8	14·2	14·6	15·0	15·3	15·7	16·1	16·5	16·9	17·3
47	12·1	12·5	12·9	13·3	13·7	14·1	14·5	14·9	15·3	15·7	16·1	16·5	16·8	17·2	17·6
48	12·4	12·8	13·2	13·6	14·0	14·4	14·8	15·2	15·6	16·0	16·4	16·8	17·2	17·6	18·0
49	12·7	13·1	13·5	13·9	14·3	14·7	15·1	15·5	15·9	16·3	16·7	17·2	17·6	18·0	18·4
50	12·9	13·3	13·7	14·2	14·6	15·0	15·4	15·8	16·3	16·7	17·1	17·5	17·9	18·3	18·8
51	13·2	13·6	14·0	14·5	14·9	15·3	15·7	16·2	16·6	17·0	17·4	17·9	18·3	18·7	19·1
52	13·4	13·9	14·3	14·7	15·2	15·6	16·0	16·5	16·9	17·3	17·8	18·2	18·6	19·1	19·5
53	13·7	14·1	14·6	15·0	15·5	15·9	16·3	16·8	17·2	17·7	18·1	18·6	19·0	19·4	19·9
54	14·0	14·4	14·8	15·3	15·8	16·2	16·7	17·1	17·6	18·0	18·5	18·9	19·4	19·8	20·3
55	14·2	14·7	15·1	15·6	16·0	16·5	17·0	17·4	17·9	18·3	18·8	19·3	19·7	20·2	20·6
56	14·5	14·9	15·4	15·9	16·3	16·8	17·3	17·7	18·2	18·7	19·1	19·6	20·1	20·5	21·0
57	14·7	15·2	15·7	16·2	16·6	17·1	17·6	18·1	18·5	19·0	19·5	20·0	20·4	20·9	21·4
58	15·0	15·5	15·9	16·4	16·9	17·4	17·9	18·4	18·9	19·3	19·8	20·3	20·8	21·3	21·8
59	15·2	15·7	16·2	16·7	17·2	17·7	18·2	18·7	19·2	19·7	20·2	20·7	21·1	21·6	22·1
60	15·5	16·0	16·5	17·0	17·5	18·0	18·5	19·0	19·5	20·0	20·5	21·0	21·5	22·0	22·5

TABLE III.—continued.

Diff. in Altitude. /	Difference in Declination.														
	23'	23'·5	24'	24'·5	25'	25'·5	26'	26'·5	27'	27'·5	28'	28'·5	29'	29'·5	30'
1	·4	·4	·4	·4	·4	·4	·4	·4	·5	·5	·5	·5	·5	·5	·5
2	·8	·8	·8	·8	·8	·9	·9	·9	·9	·9	·9	1·0	1·0	1·0	1·0
3	1·2	1·2	1·2	1·2	1·3	1·3	1·3	1·3	1·4	1·4	1·4	1·4	1·5	1·5	1·5
4	1·5	1·6	1·6	1·6	1·7	1·7	1·7	1·8	1·8	1·8	1·9	1·9	1·9	2·0	2·0
5	1·9	2·0	2·0	2·0	2·1	2·1	2·2	2·2	2·3	2·3	2·3	2·4	2·4	2·5	2·5
6	2·3	2·4	2·4	2·5	2·5	2·6	2·6	2·7	2·7	2·8	2·8	2·9	2·9	3·0	3·0
7	2·7	2·7	2·8	2·9	2·9	3·0	3·0	3·1	3·2	3·2	3·3	3·3	3·4	3·4	3·5
8	3·1	3·1	3·2	3·3	3·3	3·4	3·5	3·5	3·6	3·7	3·7	3·8	3·9	3·9	4·0
9	3·5	3·5	3·6	3·7	3·8	3·8	3·9	4·0	4·1	4·1	4·2	4·3	4·4	4·4	4·5
10	3·8	3·9	4·0	4·1	4·2	4·3	4·3	4·4	4·5	4·6	4·7	4·8	4·8	4·9	5·0
11	4·2	4·3	4·4	4·5	4·6	4·7	4·8	4·9	5·0	5·0	5·1	5·2	5·3	5·4	5·5
12	4·6	4·7	4·8	4·9	5·0	5·1	5·2	5·3	5·4	5·5	5·6	5·7	5·8	5·9	6·0
13	5·0	5·1	5·2	5·3	5·4	5·5	5·6	5·7	5·9	6·0	6·1	6·2	6·3	6·4	6·5
14	5·4	5·5	5·6	5·7	5·8	6·0	6·1	6·2	6·3	6·4	6·5	6·7	6·8	6·9	7·0
15	5·8	5·9	6·0	6·1	6·3	6·4	6·5	6·6	6·8	6·9	7·0	7·1	7·3	7·4	7·5
16	6·1	6·3	6·4	6·5	6·7	6·8	6·9	7·1	7·2	7·3	7·5	7·6	7·7	7·9	8·0
17	6·5	6·7	6·8	6·9	7·1	7·2	7·4	7·5	7·7	7·8	7·9	8·1	8·2	8·4	8·5
18	6·9	7·1	7·2	7·4	7·5	7·7	7·8	8·0	8·1	8·3	8·4	8·6	8·7	8·9	9·0
19	7·3	7·4	7·6	7·8	7·9	8·1	8·2	8·4	8·6	8·7	8·9	9·0	9·2	9·3	9·5
20	7·7	7·8	8·0	8·2	8·3	8·5	8·7	8·8	9·0	9·2	9·3	9·5	9·7	9·8	10·0
21	8·1	8·2	8·4	8·6	8·8	8·9	9·1	9·3	9·5	9·6	9·8	10·0	10·2	10·3	10·5
22	8·4	8·6	8·8	9·0	9·2	9·4	9·5	9·7	9·9	10·1	10·3	10·4	10·6	10·8	11·0
23	8·8	9·0	9·2	9·4	9·6	9·8	10·0	10·2	10·4	10·5	10·7	10·9	11·1	11·3	11·5
24	9·2	9·4	9·6	9·8	10·0	10·2	10·4	10·6	10·8	11·0	11·2	11·4	11·6	11·8	12·0
25	9·6	9·8	10·0	10·2	10·4	10·6	10·8	11·0	11·3	11·5	11·7	11·9	12·1	12·3	12·5
26	10·0	10·2	10·4	10·6	10·8	11·1	11·3	11·5	11·7	11·9	12·1	12·4	12·6	12·8	13·0
27	10·4	10·6	10·8	11·0	11·3	11·5	11·7	11·9	12·2	12·4	12·6	12·8	13·1	13·3	13·5
28	10·7	11·0	11·2	11·4	11·7	11·9	12·1	12·4	12·6	12·8	13·1	13·3	13·5	13·8	14·0
29	11·1	11·4	11·6	11·8	12·1	12·3	12·6	12·8	13·1	13·3	13·5	13·8	14·0	14·3	14·5
30	11·5	11·8	12·0	12·3	12·5	12·8	13·0	13·3	13·5	13·8	14·0	14·3	14·5	14·8	15·0
31	11·9	12·1	12·4	12·7	12·9	13·2	13·4	13·7	14·0	14·2	14·5	14·7	15·0	15·2	15·5
32	12·3	12·5	12·8	13·1	13·3	13·6	13·9	14·1	14·4	14·7	14·9	15·2	15·5	15·7	16·0
33	12·7	12·9	13·2	13·5	13·8	14·0	14·3	14·6	14·9	15·1	15·4	15·7	16·0	16·2	16·5
34	13·0	13·3	13·6	13·9	14·2	14·5	14·7	15·0	15·3	15·6	15·9	16·2	16·4	16·7	17·0
35	13·4	13·7	14·0	14·3	14·6	14·9	15·2	15·5	15·8	16·0	16·3	16·6	16·9	17·2	17·5
36	13·8	14·1	14·4	14·7	15·0	15·3	15·6	15·9	16·2	16·5	16·8	17·1	17·4	17·7	18·0
37	14·2	14·5	14·8	15·1	15·4	15·7	16·0	16·3	16·7	17·0	17·3	17·6	17·9	18·2	18·5
38	14·6	14·9	15·2	15·5	15·8	16·2	16·5	16·8	17·1	17·4	17·7	18·1	18·4	18·7	19·0
39	15·0	15·3	15·6	15·9	16·3	16·6	16·9	17·2	17·6	17·9	18·2	18·5	18·9	19·2	19·5
40	15·3	15·7	16·0	16·3	16·7	17·0	17·3	17·7	18·0	18·3	18·7	19·0	19·3	19·7	20·0
41	15·7	16·1	16·4	16·7	17·1	17·4	17·8	18·1	18·5	18·8	19·1	19·5	19·8	20·2	20·5
42	16·1	16·5	16·8	17·2	17·5	17·9	18·2	18·6	18·9	19·3	19·6	20·0	20·3	20·7	21·0
43	16·5	16·8	17·2	17·6	17·9	18·3	18·6	19·0	19·4	19·7	20·1	20·4	20·8	21·1	21·5
44	16·9	17·2	17·6	18·0	18·3	18·7	19·1	19·4	19·8	20·2	20·5	20·9	21·3	21·6	22·0
45	17·3	17·6	18·0	18·4	18·8	19·1	19·5	19·9	20·3	20·6	21·0	21·4	21·8	22·1	22·5
46	17·6	18·0	18·4	18·8	19·2	19·6	19·9	20·3	20·7	21·1	21·5	21·9	22·2	22·6	23·0
47	18·0	18·4	18·8	19·2	19·6	20·0	20·4	20·8	21·2	21·6	22·0	22·4	22·8	23·2	23·6
48	18·4	18·8	19·2	19·6	20·0	20·4	20·8	21·2	21·6	22·0	22·4	22·8	23·2	23·6	24·0
49	18·8	19·2	19·6	20·0	20·4	20·8	21·2	21·6	22·1	22·5	22·9	23·3	23·7	24·1	24·5
50	19·2	19·6	20·0	20·4	20·8	21·3	21·7	22·1	22·5	22·9	23·3	23·8	24·2	24·6	25·0
51	19·6	20·0	20·4	20·8	21·3	21·7	22·1	22·5	23·0	23·4	23·8	24·2	24·7	25·1	25·5
52	19·9	20·4	20·8	21·2	21·7	22·1	22·5	23·0	23·4	23·8	24·3	24·7	25·1	25·6	26·0
53	20·3	20·8	21·2	21·6	22·1	22·5	23·0	23·4	23·9	24·3	24·7	25·2	25·6	26·1	26·5
54	20·7	21·2	21·6	22·1	22·5	23·0	23·4	23·9	24·3	24·8	25·2	25·7	26·1	26·6	27·0
55	21·1	21·5	22·0	22·5	22·9	23·4	23·8	24·3	24·8	25·2	25·7	26·1	26·6	27·0	27·5
56	21·5	21·9	22·4	22·9	23·3	23·8	24·3	24·7	25·2	25·7	26·1	26·6	27·1	27·5	28·0
57	21·9	22·3	22·8	23·3	23·8	24·2	24·7	25·2	25·7	26·1	26·6	27·1	27·6	28·0	28·5
58	22·2	22·7	23·2	23·7	24·2	24·7	25·1	25·6	26·1	26·6	27·1	27·6	28·0	28·5	29·0
59	22·6	23·1	23·6	24·1	24·6	25·1	25·6	26·1	26·6	27·0	27·5	28·0	28·5	29·0	29·5
60	23·0	23·5	24·0	24·5	25·0	25·5	26·0	26·5	27·0	27·5	28·0	28·5	29·0	29·5	30·0

TABLE III.—continued.

Diff. in Altitude. /	Difference in Declination.														
	30'·5	31'	31'·5	32'	32'·5	33'	33'·5	34'	34'·5	35'	35'·5	36'	36'·5	37'	37'·5
1	·5	·5	·5	·5	·5	·6	·6	·6	·6	·6	·6	·6	·6	·6	·6
2	1·0	1·0	1·1	1·1	1·1	1·1	1·1	1·1	1·2	1·2	1·2	1·2	1·2	1·2	1·3
3	1·5	1·6	1·6	1·6	1·6	1·7	1·7	1·7	1·7	1·8	1·8	1·8	1·8	1·9	1·9
4	2·0	2·1	2·1	2·1	2·2	2·2	2·2	2·3	2·3	2·3	2·4	2·4	2·4	2·5	2·5
5	2·5	2·6	2·6	2·7	2·7	2·8	2·8	2·8	2·9	2·9	3·0	3·0	3·0	3·1	3·1
6	3·1	3·1	3·2	3·2	3·3	3·3	3·4	3·4	3·5	3·5	3·6	3·6	3·7	3·7	3·8
7	3·6	3·6	3·7	3·7	3·8	3·9	3·9	4·0	4·0	4·1	4·1	4·2	4·3	4·3	4·4
8	4·1	4·1	4·2	4·3	4·3	4·4	4·5	4·5	4·6	4·7	4·7	4·8	4·9	4·9	5·0
9	4·6	4·7	4·7	4·8	4·9	5·0	5·0	5·1	5·2	5·3	5·3	5·4	5·5	5·6	5·6
10	5·1	5·2	5·3	5·3	5·4	5·5	5·6	5·7	5·8	5·8	5·9	6·0	6·1	6·2	6·3
11	5·6	5·7	5·8	5·9	6·0	6·1	6·1	6·2	6·3	6·4	6·5	6·6	6·7	6·8	6·9
12	6·1	6·2	6·3	6·4	6·5	6·6	6·7	6·8	6·9	7·0	7·1	7·2	7·3	7·4	7·5
13	6·6	6·7	6·8	6·9	7·0	7·2	7·3	7·4	7·5	7·6	7·7	7·8	7·9	8·0	8·1
14	7·1	7·2	7·4	7·5	7·6	7·7	7·8	7·9	8·1	8·2	8·3	8·4	8·5	8·6	8·8
15	7·6	7·8	7·9	8·0	8·1	8·3	8·4	8·5	8·6	8·8	8·9	9·0	9·1	9·3	9·4
16	8·1	8·3	8·4	8·5	8·7	8·8	8·9	9·1	9·2	9·3	9·5	9·6	9·7	9·9	10·0
17	8·6	8·8	8·9	9·1	9·2	9·4	9·5	9·6	9·8	9·9	10·1	10·2	10·3	10·5	10·6
18	9·2	9·3	9·5	9·6	9·8	9·9	10·1	10·2	10·4	10·5	10·7	10·8	11·0	11·1	11·3
19	9·7	9·8	10·0	10·1	10·3	10·5	10·6	10·8	10·9	11·1	11·2	11·4	11·6	11·7	11·9
20	10·2	10·3	10·5	10·7	10·8	11·0	11·2	11·3	11·5	11·7	11·8	12·0	12·2	12·3	12·5
21	10·7	10·9	11·0	11·2	11·4	11·6	11·7	11·9	12·1	12·3	12·4	12·6	12·8	13·0	13·1
22	11·2	11·4	11·6	11·7	11·9	12·1	12·3	12·5	12·7	12·8	13·0	13·2	13·4	13·6	13·8
23	11·7	11·9	12·1	12·3	12·5	12·7	12·8	13·0	13·2	13·4	13·6	13·8	14·0	14·2	14·4
24	12·2	12·4	12·6	12·8	13·0	13·2	13·4	13·6	13·8	14·0	14·2	14·4	14·6	14·8	15·0
25	12·7	12·9	13·1	13·3	13·5	13·8	14·0	14·2	14·4	14·6	14·8	15·0	15·2	15·4	15·6
26	13·2	13·4	13·7	13·9	14·1	14·3	14·5	14·7	15·0	15·2	15·4	15·6	15·8	16·0	16·3
27	13·7	14·0	14·2	14·4	14·6	14·9	15·1	15·3	15·5	15·8	16·0	16·2	16·4	16·7	16·9
28	14·2	14·5	14·7	14·9	15·2	15·4	15·6	15·9	16·1	16·3	16·6	16·8	17·0	17·3	17·5
29	14·7	15·0	15·2	15·5	15·7	16·0	16·2	16·4	16·7	16·9	17·2	17·4	17·6	17·9	18·1
30	15·3	15·5	15·8	16·0	16·3	16·5	16·8	17·0	17·3	17·5	17·8	18·0	18·3	18·5	18·8
31	15·8	16·0	16·3	16·5	16·8	17·1	17·3	17·6	17·8	18·1	18·3	18·6	18·9	19·1	19·4
32	16·3	16·5	16·8	17·1	17·3	17·6	17·9	18·1	18·4	18·7	18·9	19·2	19·5	19·7	20·0
33	16·8	17·1	17·3	17·6	17·9	18·2	18·4	18·7	19·0	19·3	19·5	19·8	20·1	20·4	20·6
34	17·3	17·6	17·9	18·1	18·4	18·7	19·0	19·3	19·6	19·8	20·1	20·4	20·7	21·0	21·3
35	17·8	18·1	18·4	18·7	19·0	19·3	19·5	19·8	20·1	20·4	20·7	21·0	21·3	21·6	21·9
36	18·3	18·6	18·9	19·2	19·5	19·8	20·1	20·4	20·7	21·0	21·3	21·6	21·9	22·2	22·5
37	18·8	19·1	19·4	19·7	20·0	20·4	20·7	21·0	21·3	21·6	21·9	22·2	22·5	22·8	23·1
38	19·3	19·6	20·0	20·3	20·6	20·9	21·2	21·5	21·9	22·2	22·5	22·8	23·1	23·4	23·8
39	19·8	20·2	20·5	20·8	21·1	21·5	21·8	22·1	22·4	22·8	23·1	23·4	23·7	24·1	24·4
40	20·3	20·7	21·0	21·3	21·7	22·0	22·3	22·7	23·0	23·3	23·7	24·0	24·3	24·7	25·0
41	20·8	21·3	21·5	21·9	22·2	22·6	22·9	23·2	23·6	23·9	24·3	24·6	24·9	25·3	25·6
42	21·4	21·8	22·1	22·4	22·8	23·1	23·5	23·8	24·2	24·5	24·9	25·2	25·6	25·9	26·3
43	21·9	22·3	22·6	22·9	23·3	23·7	24·0	24·4	24·7	25·1	25·4	25·8	26·2	26·5	26·9
44	22·4	22·8	23·1	23·5	23·8	24·2	24·6	24·9	25·3	25·7	26·0	26·4	26·8	27·1	27·5
45	22·9	23·3	23·6	24·0	24·4	24·8	25·1	25·5	25·9	26·3	26·6	27·0	27·4	27·8	28·1
46	23·4	23·8	24·2	24·5	24·9	25·3	25·7	26·1	26·5	26·8	27·2	27·6	28·0	28·4	28·8
47	23·9	24·3	24·7	25·1	25·5	25·9	26·2	26·6	27·0	27·4	27·8	28·2	28·6	29·0	29·4
48	24·4	24·8	25·2	25·6	26·0	26·4	26·8	27·2	27·6	28·0	28·4	28·8	29·2	29·6	30·0
49	24·9	25·3	25·7	26·1	26·5	27·0	27·4	27·8	28·2	28·6	29·0	29·4	29·8	30·2	30·6
50	25·4	25·8	26·3	26·7	27·1	27·5	27·9	28·3	28·8	29·2	29·6	30·0	30·4	30·8	31·3
51	25·9	26·4	26·8	27·2	27·6	28·1	28·5	28·9	29·3	29·8	30·2	30·6	31·0	31·5	31·9
52	26·4	26·9	27·3	27·7	28·2	28·6	29·0	29·5	29·9	30·3	30·8	31·2	31·6	32·1	32·5
53	26·9	27·4	27·8	28·3	28·7	29·2	29·6	30·0	30·5	30·9	31·4	31·8	32·2	32·7	33·1
54	27·5	27·9	28·4	28·8	29·3	29·7	30·2	30·6	31·1	31·5	32·0	32·4	32·9	33·3	33·8
55	28·0	28·4	28·9	29·3	29·8	30·3	30·7	31·2	31·6	32·1	32·5	33·0	33·5	33·9	34·4
56	28·5	28·9	29·4	29·9	30·3	30·8	31·3	31·7	32·2	32·7	33·1	33·6	34·1	34·5	35·0
57	29·0	29·5	29·9	30·4	30·9	31·4	31·8	32·3	32·8	33·3	33·7	34·2	34·7	35·2	35·6
58	29·5	30·0	30·5	30·9	31·4	31·9	32·4	32·9	33·4	33·8	34·3	34·8	35·3	35·8	36·3
59	30·0	30·5	31·0	31·5	32·0	32·5	32·9	33·4	33·9	34·4	34·9	35·4	35·9	36·4	36·9
60	30·5	31·0	31·5	32·0	32·5	33·0	33·5	34·0	34·5	35·0	35·5	36·0	36·5	37·0	37·5

TABLE III.—continued.

Diff. in Altitude. /	Difference in Declination.														
	38'	38'·5	39'	39'·5	40'	40'·5	41'	41'·5	42'	42'·5	43'	43'·5	44'	44'·5	45'
1	·6	·6	·7	·7	·7	·7	·7	·7	·7	·7	·7	·7	·7	·7	·8
2	1·3	1·3	1·3	1·3	1·3	1·4	1·4	1·4	1·4	1·4	1·4	1·5	1·5	1·5	1·5
3	1·9	1·9	2·0	2·0	2·0	2·0	2·1	2·1	2·1	2·1	2·2	2·2	2·2	2·2	2·3
4	2·5	2·6	2·6	2·6	2·7	2·7	2·7	2·8	2·8	2·8	2·9	2·9	2·9	3·0	3·0
5	3·2	3·2	3·3	3·3	3·3	3·4	3·4	3·5	3·5	3·5	3·6	3·6	3·7	3·7	3·8
6	3·8	3·9	3·9	4·0	4·0	4·1	4·1	4·2	4·2	4·3	4·3	4·4	4·4	4·5	4·5
7	4·4	4·5	4·6	4·6	4·7	4·7	4·8	4·8	4·9	5·0	5·0	5·1	5·1	5·2	5·3
8	5·1	5·1	5·2	5·3	5·3	5·4	5·5	5·5	5·6	5·7	5·7	5·8	5·9	5·9	6·0
9	5·7	5·8	5·9	5·9	6·0	6·1	6·2	6·2	6·3	6·4	6·5	6·5	6·6	6·7	6·8
10	6·3	6·4	6·5	6·6	6·7	6·8	6·8	6·9	7·0	7·1	7·2	7·3	7·3	7·4	7·5
11	7·0	7·1	7·2	7·2	7·3	7·4	7·5	7·6	7·7	7·8	7·9	8·0	8·1	8·2	8·3
12	7·6	7·7	7·8	7·9	8·0	8·1	8·2	8·3	8·4	8·5	8·6	8·7	8·8	8·9	9·0
13	8·2	8·3	8·5	8·6	8·7	8·8	8·9	9·0	9·1	9·2	9·3	9·4	9·5	9·6	9·8
14	8·9	9·0	9·1	9·2	9·3	9·5	9·6	9·7	9·8	9·9	10·0	10·2	10·3	10·4	10·5
15	9·5	9·6	9·8	9·9	10·0	10·1	10·3	10·4	10·5	10·6	10·8	10·9	11·0	11·1	11·3
16	10·1	10·3	10·4	10·5	10·7	10·8	10·9	11·1	11·2	11·3	11·5	11·6	11·7	11·9	12·0
17	10·8	10·9	11·1	11·2	11·3	11·5	11·6	11·8	11·9	12·0	12·2	12·3	12·5	12·6	12·8
18	11·4	11·6	11·7	11·9	12·0	12·2	12·3	12·5	12·6	12·8	12·9	13·1	13·2	13·4	13·5
19	12·0	12·2	12·4	12·5	12·7	12·8	13·0	13·1	13·3	13·5	13·6	13·8	13·9	14·1	14·3
20	12·7	12·8	13·0	13·2	13·3	13·5	13·7	13·8	14·0	14·2	14·3	14·5	14·7	14·8	15·0
21	13·3	13·5	13·7	13·8	14·0	14·2	14·4	14·5	14·7	14·9	15·1	15·2	15·4	15·6	15·8
22	13·9	14·1	14·3	14·5	14·7	14·9	15·0	15·2	15·4	15·6	15·8	16·0	16·1	16·3	16·5
23	14·6	14·8	15·0	15·1	15·3	15·5	15·7	15·9	16·1	16·3	16·5	16·7	16·9	17·1	17·3
24	15·2	15·4	15·6	15·8	16·0	16·2	16·4	16·6	16·8	17·0	17·2	17·4	17·6	17·8	18·0
25	15·8	16·0	16·3	16·5	16·7	16·9	17·1	17·3	17·5	17·7	17·9	18·1	18·3	18·5	18·8
26	16·5	16·7	16·9	17·1	17·3	17·6	17·8	18·0	18·2	18·4	18·6	18·9	19·1	19·3	19·5
27	17·1	17·3	17·6	17·8	18·0	18·2	18·5	18·7	18·9	19·1	19·4	19·6	19·8	20·0	20·3
28	17·7	18·0	18·2	18·4	18·7	18·9	19·1	19·4	19·6	19·8	20·1	20·3	20·5	20·8	21·0
29	18·4	18·6	18·9	19·1	19·3	19·6	19·8	20·1	20·3	20·5	20·8	21·0	21·3	21·5	21·8
30	19·0	19·3	19·5	19·8	20·0	20·3	20·5	20·8	21·0	21·3	21·5	21·8	22·0	22·3	22·5
31	19·6	19·9	20·2	20·4	20·7	20·9	21·2	21·4	21·7	22·0	22·2	22·5	22·7	23·0	23·3
32	20·3	20·5	20·8	21·1	21·3	21·6	21·9	22·1	22·4	22·7	22·9	23·2	23·5	23·7	24·0
33	20·9	21·2	21·5	21·7	22·0	22·3	22·6	22·8	23·1	23·4	23·7	23·9	24·2	24·5	24·8
34	21·5	21·8	22·1	22·4	22·7	23·0	23·2	23·5	23·8	24·1	24·4	24·7	24·9	25·2	25·5
35	22·2	22·5	22·8	23·0	23·3	23·6	23·9	24·2	24·5	24·8	25·1	25·4	25·7	26·0	26·3
36	22·8	23·1	23·4	23·7	24·0	24·3	24·6	24·9	25·2	25·5	25·8	26·1	26·4	26·7	27·0
37	23·4	23·7	24·1	24·4	24·7	25·0	25·3	25·6	25·9	26·2	26·5	26·8	27·1	27·4	27·8
38	24·1	24·4	24·7	25·0	25·3	25·7	26·0	26·3	26·6	26·9	27·2	27·6	27·9	28·2	28·5
39	24·7	25·0	25·4	25·7	26·0	26·3	26·7	27·0	27·3	27·6	28·0	28·3	28·6	28·9	29·3
40	25·3	25·7	26·0	26·3	26·7	27·0	27·3	27·7	28·0	28·3	28·7	29·0	29·3	29·7	30·0
41	26·0	26·3	26·7	27·0	27·3	27·7	28·0	28·4	28·7	29·0	29·4	29·7	30·1	30·4	30·8
42	26·6	27·0	27·3	27·7	28·0	28·4	28·7	29·1	29·4	29·8	30·1	30·5	30·8	31·2	31·5
43	27·2	27·6	28·0	28·3	28·7	29·0	29·4	29·7	30·1	30·5	30·8	31·2	31·5	31·9	32·3
44	27·9	28·2	28·6	29·0	29·3	29·7	30·1	30·4	30·8	31·2	31·5	31·9	32·3	32·6	33·0
45	28·5	28·9	29·3	29·6	30·0	30·4	30·8	31·1	31·5	31·9	32·3	32·6	33·0	33·4	33·8
46	29·1	29·5	29·9	30·3	30·7	31·1	31·4	31·8	32·2	32·6	33·0	33·4	33·7	34·1	34·5
47	29·8	30·2	30·6	30·9	31·3	31·7	32·1	32·5	32·9	33·3	33·7	34·1	34·5	34·9	35·3
48	30·4	30·8	31·2	31·6	32·0	32·4	32·8	33·2	33·6	34·0	34·4	34·8	35·2	35·6	36·0
49	31·0	31·4	31·9	32·3	32·7	33·1	33·5	33·9	34·3	34·7	35·1	35·5	35·9	36·3	36·8
50	31·7	32·1	32·5	32·9	33·3	33·8	34·2	34·6	35·0	35·4	35·8	36·3	36·7	37·1	37·5
51	32·3	32·7	33·2	33·6	34·0	34·4	34·9	35·3	35·7	36·1	36·6	37·0	37·4	37·8	38·3
52	32·9	33·4	33·8	34·2	34·7	35·1	35·5	36·0	36·4	36·8	37·3	37·7	38·1	38·6	39·0
53	33·6	34·0	34·5	34·9	35·3	35·8	36·2	36·7	37·1	37·5	38·0	38·4	38·9	39·3	39·8
54	34·2	34·7	35·1	35·6	36·0	36·5	36·9	37·4	37·8	38·3	38·7	39·2	39·6	40·1	40·5
55	34·8	35·3	35·8	36·2	36·7	37·1	37·6	38·0	38·5	39·0	39·4	39·9	40·3	40·8	41·3
56	35·5	35·9	36·4	36·9	37·3	37·8	38·3	38·7	39·2	39·7	40·1	40·6	41·1	41·5	42·0
57	36·1	36·6	37·1	37·5	38·0	38·5	39·0	39·4	39·9	40·4	40·9	41·3	41·8	42·3	42·8
58	36·7	37·2	37·7	38·2	38·7	39·2	39·6	40·1	40·6	41·1	41·6	42·1	42·5	43·0	43·5
59	37·4	37·9	38·4	38·8	39·3	39·8	40·3	40·8	41·3	41·8	42·3	42·8	43·3	43·8	44·3
60	38·0	38·5	39·0	39·5	40·0	40·5	41·0	41·5	42·0	42·5	43·0	43·5	44·0	44·5	45·0

TABLE III.—continued.

Diff. in Altitude. /	Difference in Declination.														
	45'·5	46'	46'·5	47'	47'·5	48'	48'·5	49'	49'·5	50'	50'·5	51'	51'·5	52'	52'·5
1	·8	·8	·8	·8	·8	·8	·8	·8	·8	·8	·8	·9	·9	·9	·9
2	1·5	1·5	1·6	1·6	1·6	1·6	1·6	1·6	1·7	1·7	1·7	1·7	1·7	1·7	1·8
3	2·3	2·3	2·3	2·4	2·4	2·4	2·4	2·5	2·5	2·5	2·5	2·6	2·6	2·6	2·6
4	3·0	3·1	3·1	3·1	3·2	3·2	3·2	3·3	3·3	3·3	3·4	3·4	3·4	3·5	3·5
5	3·8	3·8	3·9	3·9	4·0	4·0	4·0	4·1	4·1	4·2	4·2	4·3	4·3	4·3	4·4
6	4·6	4·6	4·7	4·7	4·8	4·8	4·9	4·9	5·0	5·0	5·1	5·1	5·2	5·2	5·3
7	5·3	5·4	5·4	5·5	5·5	5·6	5·7	5·7	5·8	5·8	5·9	6·0	6·0	6·1	6·1
8	6·1	6·1	6·2	6·3	6·3	6·4	6·5	6·5	6·6	6·7	6·7	6·8	6·9	6·9	7·0
9	6·8	6·9	7·0	7·1	7·1	7·2	7·3	7·4	7·4	7·5	7·6	7·7	7·7	7·8	7·9
10	7·6	7·7	7·8	7·8	7·9	8·0	8·1	8·2	8·3	8·3	8·4	8·5	8·6	8·7	8·8
11	8·3	8·4	8·5	8·6	8·7	8·8	8·9	9·0	9·1	9·2	9·3	9·4	9·4	9·5	9·6
12	9·1	9·2	9·3	9·4	9·5	9·6	9·7	9·8	9·9	10·0	10·1	10·2	10·3	10·4	10·5
13	9·9	10·0	10·1	10·2	10·3	10·4	10·5	10·6	10·7	10·8	10·9	11·1	11·2	11·3	11·4
14	10·6	10·7	10·9	11·0	11·1	11·2	11·3	11·4	11·6	11·7	11·8	11·9	12·0	12·1	12·3
15	11·4	11·5	11·6	11·8	11·9	12·0	12·1	12·3	12·4	12·5	12·6	12·8	12·9	13·0	13·1
16	12·1	12·3	12·4	12·5	12·7	12·8	12·9	13·1	13·2	13·3	13·5	13·6	13·7	13·9	14·0
17	12·9	13·0	13·2	13·3	13·5	13·6	13·7	13·9	14·0	14·2	14·3	14·5	14·6	14·7	14·9
18	13·7	13·8	14·0	14·1	14·3	14·4	14·6	14·7	14·9	15·0	15·2	15·3	15·5	15·6	15·8
19	14·4	14·6	14·7	14·9	15·0	15·2	15·4	15·5	15·7	15·8	16·0	16·2	16·3	16·5	16·6
20	15·2	15·3	15·5	15·7	15·8	16·0	16·2	16·3	16·5	16·7	16·8	17·0	17·2	17·3	17·5
21	15·9	16·1	16·3	16·5	16·6	16·8	17·0	17·2	17·3	17·5	17·7	17·9	18·0	18·2	18·4
22	16·7	16·9	17·1	17·2	17·4	17·6	17·8	18·0	18·2	18·3	18·5	18·7	18·9	19·1	19·3
23	17·4	17·6	17·8	18·0	18·2	18·4	18·6	18·8	19·0	19·2	19·4	19·6	19·7	19·9	20·1
24	18·2	18·4	18·6	18·8	19·0	19·2	19·4	19·6	19·8	20·0	20·2	20·4	20·6	20·8	21·0
25	19·0	19·2	19·4	19·6	19·8	20·0	20·2	20·4	20·6	20·8	21·0	21·3	21·5	21·7	21·9
26	19·7	19·9	20·2	20·4	20·6	20·8	21·0	21·2	21·5	21·7	21·9	22·1	22·3	22·5	22·8
27	20·5	20·7	20·9	21·2	21·4	21·6	21·8	22·1	22·3	22·5	22·7	23·0	23·2	23·4	23·6
28	21·2	21·5	21·7	21·9	22·2	22·4	22·6	22·9	23·1	23·3	23·6	23·8	24·0	24·3	24·5
29	22·0	22·2	22·5	22·7	23·0	23·2	23·4	23·7	23·9	24·2	24·4	24·7	24·9	25·1	25·4
30	22·8	23·0	23·3	23·5	23·8	24·0	24·3	24·5	24·8	25·0	25·3	25·5	25·8	26·0	26·3
31	23·5	23·8	24·0	24·3	24·5	24·8	25·1	25·3	25·6	25·8	26·1	26·4	26·6	26·9	27·1
32	24·3	24·5	24·8	25·1	25·3	25·6	25·9	26·1	26·4	26·7	26·9	27·2	27·5	27·7	28·0
33	25·0	25·3	25·6	25·9	26·1	26·4	26·7	27·0	27·2	27·5	27·8	28·1	28·3	28·6	28·9
34	25·8	26·1	26·4	26·6	26·9	27·2	27·5	27·8	28·1	28·3	28·6	28·9	29·2	29·5	29·8
35	26·5	26·8	27·1	27·4	27·7	28·0	28·3	28·6	28·9	29·2	29·5	29·8	30·0	30·3	30·6
36	27·3	27·6	27·9	28·2	28·5	28·8	29·1	29·4	29·7	30·0	30·3	30·6	30·9	31·2	31·5
37	28·1	28·4	28·7	29·0	29·3	29·6	29·9	30·2	30·5	30·8	31·1	31·5	31·8	32·1	32·4
38	28·8	29·1	29·5	29·8	30·1	30·4	30·7	31·0	31·4	31·7	32·0	32·3	32·6	32·9	33·3
39	29·6	29·9	30·2	30·6	30·9	31·2	31·5	31·9	32·2	32·6	32·8	33·2	33·5	33·8	34·1
40	30·3	30·7	31·0	31·3	31·7	32·0	32·3	32·7	33·0	33·3	33·7	34·0	34·3	34·7	35·0
41	31·1	31·4	31·8	32·1	32·5	32·8	33·1	33·5	33·8	34·2	34·5	34·9	35·2	35·5	35·9
42	31·9	32·2	32·6	32·9	33·3	33·6	34·0	34·3	34·7	35·0	35·4	35·7	36·1	36·4	36·8
43	32·6	33·0	33·3	33·7	34·0	34·4	34·8	35·1	35·5	35·8	36·2	36·6	36·9	37·3	37·6
44	33·4	33·7	34·1	34·5	34·8	35·2	35·6	35·9	36·3	36·7	37·0	37·4	37·8	38·1	38·5
45	34·1	34·5	34·9	35·3	35·6	36·0	36·4	36·8	37·1	37·5	37·9	38·3	38·6	39·0	39·4
46	34·9	35·3	35·7	36·0	36·4	36·8	37·2	37·6	38·0	38·3	38·7	39·1	39·5	39·9	40·3
47	35·6	36·0	36·4	36·8	37·2	37·6	38·0	38·4	38·8	39·2	39·6	40·0	40·3	40·7	41·1
48	36·4	36·8	37·2	37·6	38·0	38·4	38·8	39·2	39·6	40·0	40·4	40·8	41·2	41·6	42·0
49	37·2	37·6	38·0	38·4	38·8	39·2	39·6	40·0	40·4	40·8	41·2	41·7	42·1	42·5	42·9
50	37·9	38·3	38·8	39·2	39·6	40·0	40·4	40·8	41·3	41·7	42·1	42·5	42·9	43·3	43·8
51	38·7	39·1	39·5	40·0	40·4	40·8	41·2	41·7	42·1	42·5	42·9	43·4	43·8	44·2	44·6
52	39·4	39·9	40·3	40·7	41·2	41·6	42·0	42·5	42·9	43·3	43·8	44·2	44·6	45·1	45·5
53	40·2	40·6	41·1	41·5	42·0	42·4	42·8	43·3	43·7	44·2	44·6	45·1	45·5	45·9	46·4
54	41·0	41·4	41·9	42·3	42·8	43·2	43·7	44·1	44·6	45·0	45·5	45·9	46·4	46·8	47·3
55	41·7	42·2	42·6	43·1	43·5	44·0	44·5	44·9	45·4	45·8	46·3	46·8	47·2	47·7	48·1
56	42·5	42·9	43·4	43·9	44·3	44·8	45·3	45·7	46·2	46·7	47·1	47·6	48·1	48·5	49·0
57	43·2	43·7	44·2	44·7	45·1	45·6	46·1	46·6	47·0	47·5	48·0	48·5	48·9	49·4	49·9
58	44·0	44·5	45·0	45·4	45·9	46·4	46·9	47·4	47·9	48·3	48·8	49·3	49·8	50·3	50·8
59	44·7	45·2	45·7	46·2	46·7	47·2	47·7	48·2	48·7	49·2	49·7	50·2	50·6	51·1	51·6
60	45·5	46·0	46·5	47·0	47·5	48·0	48·5	49·0	49·5	50·0	50·5	51·0	51·5	52·0	52·5

TABLE III.—continued.

Diff. in Altitude.	Difference in Declination.														
	53'	53'·5	54'	54'·5	55'	55'·5	56'	56'·5	57'	57'·5	58'	58'·5	59'	59'·5	60'
1	·9	·9	·9	·9	·9	·9	·9	·9	·9	1·0	1·0	1·0	1·0	1·0	1·0
2	1·8	1·8	1·8	1·8	1·8	1·9	1·9	1·9	1·9	1·9	1·9	2·0	2·0	2·0	2·0
3	2·7	2·7	2·7	2·7	2·8	2·8	2·8	2·8	2·8	2·9	2·9	2·9	3·0	3·0	3·0
4	3·5	3·6	3·6	3·6	3·7	3·7	3·7	3·8	3·8	3·8	3·9	3·9	3·9	4·0	4·0
5	4·4	4·5	4·5	4·5	4·6	4·6	4·7	4·7	4·7	4·8	4·8	4·9	4·9	5·0	5·0
6	5·3	5·4	5·4	5·5	5·5	5·6	5·6	5·7	5·7	5·8	5·8	5·9	5·9	6·0	6·0
7	6·2	6·2	6·3	6·4	6·4	6·5	6·5	6·6	6·6	6·7	6·8	6·8	6·9	6·9	7·0
8	7·1	7·1	7·2	7·3	7·3	7·4	7·5	7·5	7·6	7·7	7·7	7·8	7·9	7·9	8·0
9	8·0	8·0	8·1	8·2	8·3	8·3	8·4	8·5	8·5	8·6	8·7	8·8	8·9	8·9	9·0
10	8·8	8·9	9·0	9·1	9·2	9·3	9·3	9·4	9·5	9·6	9·7	9·8	9·8	9·9	10·0
11	9·7	9·8	9·9	10·0	10·1	10·2	10·3	10·4	10·4	10·5	10·6	10·7	10·8	10·9	11·0
12	10·6	10·7	10·8	10·9	11·0	11·1	11·2	11·3	11·4	11·5	11·6	11·7	11·8	11·9	12·0
13	11·5	11·6	11·7	11·8	11·9	12·0	12·1	12·2	12·3	12·5	12·6	12·7	12·8	12·9	13·0
14	12·4	12·5	12·6	12·7	12·8	13·0	13·1	13·2	13·3	13·4	13·5	13·7	13·8	13·9	14·0
15	13·3	13·4	13·5	13·6	13·8	13·9	14·0	14·1	14·2	14·4	14·5	14·6	14·8	14·9	15·0
16	14·1	14·3	14·4	14·5	14·7	14·8	14·9	15·1	15·2	15·3	15·5	15·6	15·7	15·9	16·0
17	15·0	15·2	15·3	15·4	15·6	15·7	15·9	16·0	16·1	16·3	16·4	16·6	16·7	16·9	17·0
18	15·9	16·1	16·2	16·4	16·5	16·7	16·8	17·0	17·1	17·3	17·4	17·6	17·7	17·9	18·0
19	16·8	16·9	17·1	17·3	17·4	17·6	17·7	17·9	18·0	18·2	18·4	18·5	18·7	18·8	19·0
20	17·7	17·8	18·0	18·2	18·3	18·5	18·7	18·8	19·0	19·2	19·3	19·5	19·7	19·8	20·0
21	18·6	18·7	18·9	19·1	19·3	19·4	19·6	19·8	19·9	20·1	20·3	20·5	20·7	20·8	21·0
22	19·4	19·6	19·8	20·0	20·2	20·4	20·5	20·7	20·9	21·1	21·3	21·5	21·6	21·8	22·0
23	20·3	20·5	20·7	20·9	21·1	21·3	21·5	21·7	21·8	22·0	22·2	22·4	22·6	22·8	23·0
24	21·2	21·4	21·6	21·8	22·0	22·2	22·4	22·6	22·8	23·0	23·2	23·4	23·6	23·8	24·0
25	22·1	22·3	22·5	22·7	22·9	23·1	23·3	23·5	23·7	24·0	24·2	24·4	24·6	24·8	25·0
26	23·0	23·2	23·4	23·6	23·8	24·1	24·3	24·5	24·7	24·9	25·1	25·4	25·6	25·8	26·0
27	23·9	24·1	24·3	24·5	24·8	25·0	25·2	25·4	25·6	25·9	26·1	26·3	26·6	26·8	27·0
28	24·7	25·0	25·2	25·4	25·7	25·9	26·1	26·4	26·6	26·8	27·1	27·3	27·5	27·8	28·0
29	25·6	25·9	26·1	26·3	26·6	26·8	27·1	27·3	27·5	27·8	28·0	28·3	28·5	28·8	29·0
30	26·5	26·8	27·0	27·3	27·5	27·8	28·0	28·3	28·5	28·8	29·0	29·3	29·5	29·8	30·0
31	27·4	27·6	27·9	28·2	28·4	28·7	28·9	29·2	29·4	29·7	30·0	30·2	30·5	30·7	31·0
32	28·3	28·5	28·8	29·1	29·3	29·6	29·9	30·1	30·4	30·7	30·9	31·2	31·5	31·7	32·0
33	29·2	29·4	29·7	30·0	30·3	30·5	30·8	31·1	31·3	31·6	31·9	32·2	32·5	32·7	33·0
34	30·0	30·3	30·6	30·9	31·2	31·5	31·7	32·0	32·3	32·6	32·9	33·2	33·4	33·7	34·0
35	30·9	31·2	31·5	31·8	32·1	32·4	32·7	33·0	33·2	33·5	33·8	34·1	34·4	34·7	35·0
36	31·8	32·1	32·4	32·7	33·0	33·3	33·6	33·9	34·2	34·5	34·8	35·1	35·4	35·7	36·0
37	32·7	33·0	33·3	33·6	33·9	34·2	34·5	34·8	35·1	35·5	35·8	36·1	36·4	36·7	37·0
38	33·6	33·9	34·2	34·5	34·8	35·2	35·5	35·8	36·1	36·4	36·7	37·1	37·4	37·7	38·0
39	34·5	34·8	35·1	35·4	35·8	36·1	36·4	36·7	37·0	37·4	37·7	38·0	38·4	38·7	39·0
40	35·3	35·7	36·0	36·3	36·7	37·0	37·3	37·7	38·0	38·3	38·7	39·0	39·3	39·7	40·0
41	36·2	36·6	36·9	37·2	37·6	37·9	38·3	38·6	38·9	39·3	39·6	40·0	40·3	40·7	41·0
42	37·1	37·5	37·8	38·2	38·5	38·9	39·2	39·6	39·9	40·3	40·6	41·0	41·3	41·7	42·0
43	38·0	38·3	38·7	39·1	39·4	39·8	40·1	40·5	40·8	41·2	41·6	41·9	42·3	42·6	43·0
44	38·9	39·2	39·6	40·0	40·3	40·7	41·1	41·4	41·8	42·2	42·5	42·9	43·3	43·6	44·0
45	39·8	40·1	40·5	40·9	41·3	41·6	42·0	42·4	42·7	43·1	43·5	43·9	44·3	44·6	45·0
46	40·6	41·0	41·4	41·8	42·2	42·6	42·9	43·3	43·7	44·1	44·5	44·9	45·2	45·6	46·0
47	41·5	41·9	42·3	42·7	43·1	43·5	43·9	44·3	44·6	45·0	45·4	45·8	46·2	46·6	47·0
48	42·4	42·8	43·2	43·6	44·0	44·4	44·8	45·2	45·6	46·0	46·4	46·8	47·2	47·6	48·0
49	43·3	43·7	44·1	44·5	44·9	45·3	45·7	46·1	46·5	47·0	47·4	47·8	48·2	48·6	49·0
50	44·2	44·6	45·0	45·4	45·8	46·3	46·7	47·1	47·5	47·9	48·3	48·8	49·2	49·6	50·0
51	45·1	45·5	45·9	46·3	46·8	47·2	47·6	48·0	48·4	48·9	49·3	49·7	50·2	50·6	51·0
52	45·9	46·4	46·8	47·2	47·7	48·1	48·5	49·0	49·4	49·8	50·3	50·7	51·1	51·6	52·0
53	46·8	47·3	47·7	48·1	48·6	49·0	49·5	49·9	50·3	50·8	51·2	51·7	52·1	52·6	53·0
54	47·7	48·2	48·6	49·1	49·5	50·0	50·4	50·9	51·3	51·8	52·2	52·7	53·1	53·6	54·0
55	48·6	49·0	49·5	50·0	50·4	50·9	51·3	51·8	52·2	52·7	53·2	53·6	54·1	54·5	55·0
56	49·5	49·9	50·4	50·9	51·3	51·8	52·3	52·7	53·2	53·7	54·1	54·6	55·1	55·5	56·0
57	50·4	50·8	51·3	51·8	52·3	52·7	53·2	53·7	54·1	54·6	55·1	55·6	56·1	56·5	57·0
58	51·2	51·7	52·2	52·7	53·2	53·7	54·1	54·6	55·1	55·6	56·1	56·6	57·0	57·5	58·0
59	52·1	52·6	53·1	53·6	54·1	54·6	55·1	55·6	56·0	56·5	57·0	57·5	58·0	58·5	59·0
60	53·0	53·5	54·0	54·5	55·0	55·5	56·0	56·5	57·0	57·5	58·0	58·5	59·0	59·5	60·0

TABLE IV.

Proportional logarithms. (Log. 60 — log. of number.)

/	m.	s.	·0	·1	·2	·3	·4	·5	·6	·7	·8	·9
			·0 ^s	·4 ^s	·8 ^s	1 ^s ·2	1 ^s ·6	2 ^s ·0	2 ^s ·4	2 ^s ·8	3 ^s ·2	3 ^s ·6
0	0	0		2·778	2·477	2·301	2·176	2·079	2·000	1·933	1·875	1·824
1	0	4	1·778	1·737	1·699	1·664	1·632	1·602	1·574	1·548	1·523	1·499
2	0	8	1·477	1·456	1·436	1·417	1·398	1·380	1·363	1·347	1·331	1·316
3	0	12	1·301	1·287	1·273	1·260	1·247	1·234	1·222	1·210	1·198	1·187
4	0	16	1·176	1·165	1·155	1·145	1·135	1·125	1·115	1·106	1·097	1·088
5	0	20	1·079	1·071	1·062	1·054	1·046	1·038	1·030	1·022	1·015	1·007
6	0	24	1·000	·993	·986	·979	·972	·965	·959	·952	·946	·939
7	0	28	·933	·927	·921	·915	·909	·903	·897	·892	·886	·881
8	0	32	·875	·870	·864	·859	·854	·849	·844	·839	·834	·829
9	0	36	·824	·819	·814	·810	·805	·801	·796	·791	·787	·783
10	0	40	·778	·774	·770	·765	·761	·757	·753	·749	·745	·741
11	0	44	·737	·733	·729	·725	·721	·718	·714	·710	·706	·703
12	0	48	·699	·695	·692	·688	·685	·681	·678	·674	·671	·668
13	0	52	·664	·661	·658	·654	·651	·648	·645	·642	·638	·635
14	0	56	·632	·629	·626	·623	·620	·617	·614	·611	·608	·605
15	1	0	·602	·599	·596	·594	·591	·588	·585	·582	·580	·577
16	1	4	·574	·571	·569	·566	·563	·561	·558	·556	·553	·550
17	1	8	·548	·545	·543	·540	·538	·535	·533	·530	·528	·525
18	1	12	·523	·521	·518	·516	·513	·511	·509	·506	·504	·502
19	1	16	·499	·497	·495	·493	·490	·488	·486	·484	·482	·479
20	1	20	·477	·475	·473	·471	·469	·466	·464	·462	·460	·458
21	1	24	·456	·454	·452	·450	·448	·446	·444	·442	·440	·438
22	1	28	·436	·434	·432	·430	·428	·426	·424	·422	·420	·418
23	1	32	·417	·415	·413	·411	·409	·407	·405	·404	·402	·400
24	1	36	·398	·396	·394	·393	·391	·389	·387	·386	·384	·382
25	1	40	·380	·379	·377	·375	·373	·372	·370	·368	·367	·365
26	1	44	·363	·362	·360	·358	·357	·355	·353	·352	·350	·348
27	1	48	·347	·345	·344	·342	·340	·339	·337	·336	·334	·333
28	1	52	·331	·330	·328	·326	·325	·323	·322	·320	·319	·317
29	1	56	·316	·314	·313	·311	·310	·308	·307	·305	·304	·303
30	2	0	·301	·300	·298	·297	·295	·294	·293	·291	·290	·288
31	2	4	·287	·285	·284	·283	·281	·280	·279	·277	·276	·274
32	2	8	·273	·272	·270	·269	·268	·266	·265	·264	·262	·261
33	2	12	·260	·258	·257	·256	·254	·253	·252	·251	·249	·248
34	2	16	·247	·245	·244	·243	·242	·240	·239	·238	·237	·235
35	2	20	·234	·233	·232	·230	·229	·228	·227	·226	·224	·223
36	2	24	·222	·221	·220	·218	·217	·216	·215	·214	·212	·211
37	2	28	·210	·209	·208	·207	·205	·204	·203	·202	·201	·200
38	2	32	·198	·197	·196	·195	·194	·193	·192	·191	·189	·188
39	2	36	·187	·186	·185	·184	·183	·182	·181	·179	·178	·177
40	2	40	·176	·175	·174	·173	·172	·171	·170	·169	·168	·167
41	2	44	·165	·164	·163	·162	·161	·160	·159	·158	·157	·156
42	2	48	·155	·154	·153	·152	·151	·150	·149	·148	·147	·146
43	2	52	·145	·144	·143	·142	·141	·140	·139	·138	·137	·136
44	2	56	·135	·134	·133	·132	·131	·130	·129	·128	·127	·126
45	3	0	·125	·124	·123	·122	·121	·120	·119	·118	·117	·116
46	3	4	·115	·115	·114	·113	·112	·111	·110	·109	·108	·107
47	3	8	·106	·105	·104	·103	·102	·102	·101	·100	·099	·098
48	3	12	·097	·096	·095	·094	·093	·093	·092	·091	·090	·089
49	3	16	·088	·087	·086	·085	·085	·084	·083	·082	·081	·080
50	3	20	·079	·078	·078	·077	·076	·075	·074	·073	·072	·072
51	3	24	·071	·070	·069	·068	·067	·066	·066	·065	·064	·063
52	3	28	·062	·061	·061	·060	·059	·058	·057	·056	·056	·055
53	3	32	·054	·053	·052	·052	·051	·050	·049	·048	·047	·047
54	3	36	·046	·045	·044	·043	·043	·042	·041	·040	·039	·039
55	3	40	·038	·037	·036	·036	·035	·034	·033	·032	·032	·031
56	3	44	·030	·029	·029	·028	·027	·026	·025	·025	·024	·023
57	3	48	·022	·022	·021	·020	·019	·019	·018	·017	·016	·016
58	3	52	·015	·014	·013	·013	·012	·011	·010	·010	·009	·008
59	3	56	·007	·007	·006	·005	·004	·004	·003	·002	·002	·001

Example.—If the altitude is $51^{\circ} 8' \cdot 2$ when the declination is 2° , and $51^{\circ} 57' \cdot 5$ when the declination is 3° , what is it when the declination is $2^{\circ} 21' \cdot 3$?

$$\begin{array}{r} 51^{\circ} 57' \cdot 5 \\ 51^{\circ} 8' \cdot 2 \\ \hline \end{array}$$

Difference

$$\begin{array}{r} 49' \cdot 3 \text{ prop. log. } \cdot 085 \\ 21' \cdot 3 \text{ prop. log. } \cdot 450 \\ \hline \end{array}$$

$$\text{Sum} \quad - \quad \cdot 535 = 17' \cdot 5$$

Therefore required altitude is $51^{\circ} 8' \cdot 2 + 17' \cdot 5$ or $51^{\circ} 25' \cdot 7$

TABLE V.

TABLE OF COMMON LOGARITHMS.

1	·0000	61	·7853	121	·0828	181	·2577	241	·3820	301	·4786	361	·5575	421	·6243	481	·6821	541	·7332
2	·3010	62	·7924	122	·0864	182	·2601	242	·3838	302	·4800	362	·5587	422	·6253	482	·6830	542	·7340
3	·4771	63	·7993	123	·0899	183	·2625	243	·3856	303	·4814	363	·5599	423	·6263	483	·6839	543	·7348
4	·6021	64	·8062	124	·0934	184	·2648	244	·3874	304	·4829	364	·5611	424	·6274	484	·6848	544	·7356
5	·6990	65	·8129	125	·0969	185	·2672	245	·3892	305	·4843	365	·5623	425	·6284	485	·6857	545	·7364
6	·7782	66	·8195	126	·1004	186	·2695	246	·3909	306	·4857	366	·5635	426	·6294	486	·6866	546	·7372
7	·8451	67	·8261	127	·1038	187	·2718	247	·3927	307	·4871	367	·5647	427	·6304	487	·6875	547	·7380
8	·9031	68	·8325	128	·1072	188	·2742	248	·3945	308	·4886	368	·5658	428	·6314	488	·6884	548	·7388
9	·9542	69	·8388	129	·1106	189	·2765	249	·3962	309	·4900	369	·5670	429	·6325	489	·6893	549	·7396
10	·0000	70	·8451	130	·1139	190	·2788	250	·3979	310	·4914	370	·5682	430	·6335	490	·6902	550	·7404
11	·0414	71	·8513	131	·1173	191	·2810	251	·3997	311	·4928	371	·5694	431	·6345	491	·6911	551	·7412
12	·0792	72	·8573	132	·1206	192	·2833	252	·4014	312	·4942	372	·5705	432	·6355	492	·6920	552	·7419
13	·1139	73	·8633	133	·1239	193	·2856	253	·4031	313	·4955	373	·5717	433	·6365	493	·6928	553	·7427
14	·1461	74	·8692	134	·1271	194	·2878	254	·4048	314	·4969	374	·5729	434	·6375	494	·6937	554	·7435
15	·1761	75	·8751	135	·1303	195	·2900	255	·4065	315	·4983	375	·5740	435	·6385	495	·6946	555	·7443
16	·2041	76	·8808	136	·1335	196	·2923	256	·4082	316	·4997	376	·5752	436	·6395	496	·6955	556	·7451
17	·2304	77	·8865	137	·1367	197	·2945	257	·4099	317	·5011	377	·5763	437	·6405	497	·6964	557	·7459
18	·2553	78	·8921	138	·1399	198	·2967	258	·4116	318	·5024	378	·5775	438	·6415	498	·6972	558	·7466
19	·2788	79	·8976	139	·1430	199	·2989	259	·4133	319	·5038	379	·5786	439	·6425	499	·6981	559	·7474
20	·3010	80	·9031	140	·1461	200	·3010	260	·4150	320	·5052	380	·5798	440	·6435	500	·6990	560	·7482
21	·3222	81	·9085	141	·1492	201	·3032	261	·4166	321	·5065	381	·5809	441	·6444	501	·6998	561	·7490
22	·3424	82	·9138	142	·1523	202	·3054	262	·4183	322	·5079	382	·5821	442	·6454	502	·7007	562	·7497
23	·3617	83	·9191	143	·1553	203	·3075	263	·4200	323	·5092	383	·5832	443	·6464	503	·7016	563	·7505
24	·3802	84	·9243	144	·1584	204	·3096	264	·4216	324	·5105	384	·5843	444	·6474	504	·7024	564	·7513
25	·3979	85	·9294	145	·1614	205	·3118	265	·4232	325	·5119	385	·5855	445	·6484	505	·7033	565	·7520
26	·4150	86	·9345	146	·1644	206	·3139	266	·4249	326	·5132	386	·5866	446	·6493	506	·7042	566	·7528
27	·4314	87	·9395	147	·1673	207	·3160	267	·4265	327	·5145	387	·5877	447	·6503	507	·7050	567	·7536
28	·4472	88	·9445	148	·1703	208	·3181	268	·4281	328	·5159	388	·5888	448	·6513	508	·7059	568	·7543
29	·4624	89	·9494	149	·1732	209	·3201	269	·4298	329	·5172	389	·5899	449	·6522	509	·7067	569	·7551
30	·4771	90	·9542	150	·1761	210	·3222	270	·4314	330	·5185	390	·5911	450	·6532	510	·7076	570	·7559
31	·4914	91	·9590	151	·1790	211	·3243	271	·4330	331	·5198	391	·5922	451	·6542	511	·7084	571	·7566
32	·5051	92	·9638	152	·1818	212	·3263	272	·4346	332	·5211	392	·5933	452	·6551	512	·7093	572	·7574
33	·5185	93	·9685	153	·1847	213	·3284	273	·4362	333	·5224	393	·5944	453	·6561	513	·7101	573	·7582
34	·5315	94	·9731	154	·1875	214	·3304	274	·4373	334	·5237	394	·5955	454	·6571	514	·7110	574	·7589
35	·5441	95	·9777	155	·1903	215	·3324	275	·4393	335	·5250	395	·5966	455	·6580	515	·7118	575	·7597
36	·5563	96	·9823	156	·1931	216	·3345	276	·4409	336	·5263	396	·5977	456	·6590	516	·7126	576	·7604
37	·5682	97	·9868	157	·1959	217	·3365	277	·4425	337	·5276	397	·5988	457	·6599	517	·7135	577	·7612
38	·5798	98	·9912	158	·1987	218	·3385	278	·4440	338	·5289	398	·5999	458	·6609	518	·7143	578	·7619
39	·5911	99	·9956	159	·2014	219	·3404	279	·4456	339	·5302	399	·6010	459	·6618	519	·7152	579	·7627
40	·6021	100	·0000	160	·2041	220	·3424	280	·4472	340	·5315	400	·6021	460	·6628	520	·7160	580	·7634
41	·6128	101	·0043	161	·2068	221	·3444	281	·4487	341	·5328	401	·6031	461	·6637	521	·7168	581	·7642
42	·6232	102	·0086	162	·2095	222	·3464	282	·4502	342	·5340	402	·6042	462	·6646	522	·7177	582	·7649
43	·6335	103	·0128	163	·2122	223	·3483	283	·4518	343	·5353	403	·6053	463	·6656	523	·7185	583	·7657
44	·6435	104	·0170	164	·2148	224	·3502	284	·4533	344	·5366	404	·6064	464	·6665	524	·7193	584	·7664
45	·6532	105	·0212	165	·2175	225	·3522	285	·4548	345	·5378	405	·6075	465	·6675	525	·7202	585	·7672
46	·6628	106	·0253	166	·2201	226	·3541	286	·4564	346	·5391	406	·6085	466	·6684	526	·7210	586	·7679
47	·6721	107	·0294	167	·2227	227	·3560	287	·4579	347	·5403	407	·6096	467	·6693	527	·7218	587	·7686
48	·6812	108	·0334	168	·2253	228	·3579	288	·4594	348	·5416	408	·6107	468	·6702	528	·7226	588	·7694
49	·6902	109	·0374	169	·2279	229	·3598	289	·4609	349	·5428	409	·6117	469	·6712	529	·7235	589	·7701
50	·6990	110	·0414	170	·2304	230	·3617	290	·4624	350	·5441	410	·6128	470	·6721	530	·7243	590	·7709
51	·7076	111	·0453	171	·2330	231	·3636	291	·4639	351	·5453	411	·6138	471	·6730	531	·7251	591	·7716
52	·7160	112	·0492	172	·2355	232	·3655	292	·4654	352	·5465	412	·6149	472	·6739	532	·7259	592	·7723
53	·7243	113	·0531	173	·2380	233	·3674	293	·4669	353	·5478	413	·6160	473	·6749	533	·7267	593	·7731
54	·7324	114	·0569	174	·2405	234	·3692	294	·4683	354	·5490	414	·6170	474	·6758	534	·7275	594	·7738
55	·7404	115	·0607	175	·2430	235	·3711	295	·4698	355	·5502	415	·6180	475	·6767	535	·7284	595	·7745
56	·7482	116	·0645	176	·2455	236	·3729	296	·4713	356	·5514	416	·6191	476	·6776	536	·7292	596	·7752
57	·7559	117	·0682	177	·2480	237	·3747	297	·4728	357	·5527	417	·6201	477	·6785	537	·7300	597	·7760
58	·7634	118	·0719	178	·2504	238	·3766	298	·4742	358	·5539	418	·6212	478	·6794	538	·7308	598	·7767
59	·7709	119	·0755	179	·2529	239	·3784	299	·4757	359	·5551	419	·6222	479	·6803	539	·7316	599	·7774
60	·7782	120	·0792	180	·2553	240	·3802	300	·4771	360	·5563	420	·6232	480	·6812	540	·7324	600	·7782

TABLE V.—*continued.*TABLE OF COMMON LOGARITHMS—*continued.*

601 ·7789	661 ·8202	721 ·8579	781 ·8927	841 ·9248	901 ·9547	961 ·9827	1021 ·0090	1081 ·0338	1141 ·0573
602 ·7796	662 ·8209	722 ·8585	782 ·8932	842 ·9253	902 ·9552	962 ·9832	1022 ·0095	1082 ·0342	1142 ·0577
603 ·7803	663 ·8215	723 ·8591	783 ·8938	843 ·9258	903 ·9557	963 ·9836	1023 ·0099	1083 ·0346	1143 ·0580
604 ·7810	664 ·8222	724 ·8597	784 ·8943	844 ·9263	904 ·9562	964 ·9841	1024 ·0103	1084 ·0350	1144 ·0584
605 ·7818	665 ·8228	725 ·8603	785 ·8949	845 ·9269	905 ·9566	965 ·9845	1025 ·0107	1085 ·0354	1145 ·0588
606 ·7825	666 ·8235	726 ·8609	786 ·8954	846 ·9274	906 ·9571	966 ·9850	1026 ·0111	1086 ·0358	1146 ·0592
607 ·7832	667 ·8241	727 ·8615	787 ·8960	847 ·9279	907 ·9576	967 ·9854	1027 ·0116	1087 ·0362	1147 ·0596
608 ·7839	668 ·8248	728 ·8621	788 ·8965	848 ·9284	908 ·9581	968 ·9859	1028 ·0120	1088 ·0366	1148 ·0599
609 ·7846	669 ·8254	729 ·8627	789 ·8971	849 ·9289	909 ·9586	969 ·9863	1029 ·0124	1089 ·0370	1149 ·0603
610 ·7853	670 ·8261	730 ·8633	790 ·8976	850 ·9294	910 ·9590	970 ·9868	1030 ·0128	1090 ·0374	1150 ·0607
611 ·7860	671 ·8267	731 ·8639	791 ·8982	851 ·9299	911 ·9595	971 ·9872	1031 ·0133	1091 ·0378	1151 ·0611
612 ·7868	672 ·8274	732 ·8645	792 ·8987	852 ·9304	912 ·9600	972 ·9877	1032 ·0137	1092 ·0382	1152 ·0615
613 ·7875	673 ·8280	733 ·8651	793 ·8993	853 ·9309	913 ·9605	973 ·9881	1033 ·0141	1093 ·0386	1153 ·0618
614 ·7882	674 ·8287	734 ·8657	794 ·8998	854 ·9315	914 ·9609	974 ·9886	1034 ·0145	1094 ·0390	1154 ·0622
615 ·7889	675 ·8293	735 ·8663	795 ·9004	855 ·9320	915 ·9614	975 ·9890	1035 ·0149	1095 ·0394	1155 ·0626
616 ·7896	676 ·8299	736 ·8669	796 ·9009	856 ·9325	916 ·9619	976 ·9894	1036 ·0154	1096 ·0398	1156 ·0630
617 ·7903	677 ·8306	737 ·8675	797 ·9015	857 ·9330	917 ·9624	977 ·9899	1037 ·0158	1097 ·0402	1157 ·0633
618 ·7910	678 ·8312	738 ·8681	798 ·9020	858 ·9335	918 ·9628	978 ·9903	1038 ·0162	1098 ·0406	1158 ·0637
619 ·7917	679 ·8319	739 ·8686	799 ·9025	859 ·9340	919 ·9633	979 ·9908	1039 ·0166	1099 ·0410	1159 ·0641
620 ·7924	680 ·8325	740 ·8692	800 ·9031	860 ·9345	920 ·9638	980 ·9912	1040 ·0170	1100 ·0414	1160 ·0645
621 ·7931	681 ·8331	741 ·8698	801 ·9036	861 ·9350	921 ·9643	981 ·9917	1041 ·0175	1101 ·0418	1161 ·0648
622 ·7938	682 ·8338	742 ·8704	802 ·9042	862 ·9355	922 ·9647	982 ·9921	1042 ·0179	1102 ·0422	1162 ·0652
623 ·7945	683 ·8344	743 ·8710	803 ·9047	863 ·9360	923 ·9652	983 ·9926	1043 ·0183	1103 ·0426	1163 ·0656
624 ·7952	684 ·8351	744 ·8716	804 ·9053	864 ·9365	924 ·9657	984 ·9930	1044 ·0187	1104 ·0430	1164 ·0660
625 ·7959	685 ·8357	745 ·8722	805 ·9058	865 ·9370	925 ·9661	985 ·9934	1045 ·0191	1105 ·0434	1165 ·0663
626 ·7966	686 ·8363	746 ·8727	806 ·9063	866 ·9375	926 ·9666	986 ·9939	1046 ·0195	1106 ·0438	1166 ·0667
627 ·7973	687 ·8370	747 ·8733	807 ·9069	867 ·9380	927 ·9671	987 ·9943	1047 ·0199	1107 ·0441	1167 ·0671
628 ·7980	688 ·8376	748 ·8739	808 ·9074	868 ·9385	928 ·9675	988 ·9948	1048 ·0204	1108 ·0445	1168 ·0674
629 ·7987	689 ·8382	749 ·8745	809 ·9079	869 ·9390	929 ·9680	989 ·9952	1049 ·0208	1109 ·0449	1169 ·0678
630 ·7993	690 ·8388	750 ·8751	810 ·9085	870 ·9395	930 ·9685	990 ·9956	1050 ·0212	1110 ·0453	1170 ·0682
631 ·8000	691 ·8395	751 ·8756	811 ·9090	871 ·9400	931 ·9689	991 ·9961	1051 ·0216	1111 ·0457	1171 ·0686
632 ·8007	692 ·8401	752 ·8762	812 ·9096	872 ·9405	932 ·9694	992 ·9965	1052 ·0220	1112 ·0461	1172 ·0689
633 ·8014	693 ·8407	753 ·8768	813 ·9101	873 ·9410	933 ·9699	993 ·9969	1053 ·0224	1113 ·0465	1173 ·0693
634 ·8021	694 ·8414	754 ·8774	814 ·9106	874 ·9415	934 ·9703	994 ·9974	1054 ·0228	1114 ·0469	1174 ·0697
635 ·8028	695 ·8420	755 ·8779	815 ·9112	875 ·9420	935 ·9708	995 ·9978	1055 ·0233	1115 ·0473	1175 ·0700
636 ·8035	696 ·8426	756 ·8785	816 ·9117	876 ·9425	936 ·9713	996 ·9983	1056 ·0237	1116 ·0477	1176 ·0704
637 ·8041	697 ·8432	757 ·8791	817 ·9122	877 ·9430	937 ·9717	997 ·9987	1057 ·0241	1117 ·0481	1177 ·0708
638 ·8048	698 ·8439	758 ·8797	818 ·9128	878 ·9435	938 ·9722	998 ·9991	1058 ·0245	1118 ·0484	1178 ·0711
639 ·8055	699 ·8445	759 ·8802	819 ·9133	879 ·9440	939 ·9727	999 ·9996	1059 ·0249	1119 ·0488	1179 ·0715
640 ·8062	700 ·8451	760 ·8808	820 ·9138	880 ·9445	940 ·9731	1000 ·0000	1060 ·0253	1120 ·0492	1180 ·0719
641 ·8069	701 ·8457	761 ·8814	821 ·9143	881 ·9450	941 ·9736	1001 ·0004	1061 ·0257	1121 ·0496	1181 ·0722
642 ·8075	702 ·8463	762 ·8820	822 ·9149	882 ·9455	942 ·9741	1002 ·0009	1062 ·0261	1122 ·0500	1182 ·0726
643 ·8082	703 ·8470	763 ·8825	823 ·9154	883 ·9460	943 ·9745	1003 ·0013	1063 ·0265	1123 ·0504	1183 ·0730
644 ·8089	704 ·8476	764 ·8831	824 ·9159	884 ·9465	944 ·9750	1004 ·0017	1064 ·0269	1124 ·0508	1184 ·0734
645 ·8096	705 ·8482	765 ·8837	825 ·9165	885 ·9469	945 ·9754	1005 ·0022	1065 ·0273	1125 ·0512	1185 ·0737
646 ·8102	706 ·8488	766 ·8842	826 ·9170	886 ·9474	946 ·9759	1006 ·0026	1066 ·0278	1126 ·0515	1186 ·0741
647 ·8109	707 ·8494	767 ·8848	827 ·9175	887 ·9479	947 ·9764	1007 ·0030	1067 ·0282	1127 ·0519	1187 ·0745
648 ·8116	708 ·8500	768 ·8854	828 ·9180	888 ·9484	948 ·9768	1008 ·0035	1068 ·0286	1128 ·0523	1188 ·0748
649 ·8122	709 ·8506	769 ·8859	829 ·9186	889 ·9489	949 ·9773	1009 ·0039	1069 ·0290	1129 ·0527	1189 ·0752
650 ·8129	710 ·8513	770 ·8865	830 ·9191	890 ·9494	950 ·9777	1010 ·0043	1070 ·0294	1130 ·0531	1190 ·0755
651 ·8136	711 ·8519	771 ·8871	831 ·9196	891 ·9499	951 ·9782	1011 ·0048	1071 ·0298	1131 ·0535	1191 ·0759
652 ·8142	712 ·8525	772 ·8876	832 ·9201	892 ·9504	952 ·9786	1012 ·0052	1072 ·0302	1132 ·0538	1192 ·0763
653 ·8149	713 ·8531	773 ·8882	833 ·9206	893 ·9509	953 ·9791	1013 ·0056	1073 ·0306	1133 ·0542	1193 ·0766
654 ·8156	714 ·8537	774 ·8887	834 ·9212	894 ·9513	954 ·9795	1014 ·0060	1074 ·0310	1134 ·0546	1194 ·0770
655 ·8162	715 ·8543	775 ·8893	835 ·9217	895 ·9518	955 ·9800	1015 ·0065	1075 ·0314	1135 ·0550	1195 ·0774
656 ·8169	716 ·8549	776 ·8899	836 ·9222	896 ·9523	956 ·9805	1016 ·0069	1076 ·0318	1136 ·0554	1196 ·0777
657 ·8176	717 ·8555	777 ·8904	837 ·9227	897 ·9528	957 ·9809	1017 ·0073	1077 ·0322	1137 ·0558	1197 ·0781
658 ·8182	718 ·8561	778 ·8910	838 ·9232	898 ·9533	958 ·9814	1018 ·0077	1078 ·0326	1138 ·0561	1198 ·0785
659 ·8189	719 ·8567	779 ·8915	839 ·9238	899 ·9538	959 ·9818	1019 ·0082	1079 ·0330	1139 ·0565	1199 ·0788
660 ·8195	720 ·8573	780 ·8921	840 ·9243	900 ·9542	960 ·9823	1020 ·0086	1080 ·0334	1140 ·0569	1200 ·0792

L Sine Azimuth = L Secant Latitude
 - log. 120 + log. Diff. Alt. in 8^m.

TABLE VI.A.

L Secant Lat.
 - log. 120.

TABLE VI.B.

L Sine Azimuth.

Lat.	Azimuth.	L Sine.	Azimuth.	L Sine.
0°	7° 30'	7.9408	40° 30'	9.8125
1°	7° 30'	8.4179	41° 30'	9.8213
2°	7° 30'	8.6397	42° 30'	9.8297
3°	7° 30'	8.7857	43° 30'	9.8378
4°	7° 30'	8.8946	44° 30'	9.8457
5°	7° 30'	8.9816	45° 30'	9.8532
6°	7° 30'	9.0539	46° 30'	9.8606
7°	7° 30'	9.1157	47° 30'	9.8676
8°	7° 30'	9.1697	48° 30'	9.8745
9°	7° 30'	9.2176	49° 30'	9.8810
10°	7° 30'	9.2606	50° 30'	9.8874
11°	7° 30'	9.2997	51° 30'	9.8935
12°	7° 30'	9.3353	52° 30'	9.8995
13°	7° 30'	9.3682	53° 30'	9.9052
14°	7° 30'	9.3986	54° 30'	9.9107
15°	7° 30'	9.4269	55° 30'	9.9160
16°	7° 30'	9.4533	56° 30'	9.9211
17°	7° 30'	9.4781	57° 30'	9.9260
18°	7° 30'	9.5015	58° 30'	9.9308
19°	7° 30'	9.5235	59° 30'	9.9353
20°	7° 30'	9.5443	60° 30'	9.9397
21°	7° 30'	9.5641	61° 30'	9.9439
22°	7° 30'	9.5828	62° 30'	9.9479
23°	7° 30'	9.6007	63° 30'	9.9518
24°	7° 30'	9.6177	64° 30'	9.9555
25°	7° 30'	9.6340	65° 30'	9.9590
26°	7° 30'	9.6495	66° 30'	9.9624
27°	7° 30'	9.6644	67° 30'	9.9656
28°	7° 30'	9.6787	68° 30'	9.9687
29°	7° 30'	9.6923	69° 30'	9.9716
30°	7° 30'	9.7055	70° 30'	9.9743
	31° 30'	9.7181	71° 30'	9.9770
	32° 30'	9.7302	72° 30'	9.9794
	33° 30'	9.7419	73° 30'	9.9817
	34° 30'	9.7531	74° 30'	9.9839
	35° 30'	9.7640	75° 30'	9.9859
	36° 30'	9.7744	76° 30'	9.9878
	37° 30'	9.7844	77° 30'	9.9896
	38° 30'	9.7942	78° 30'	9.9912
	39° 30'	9.8035	79° 30'	9.9927

TABLE VII.

Diff. Alts. for adjacent degrees
 of Latitude = 120 cos. Azimuth.

Difference of Altitudes.	Azimuth.	Difference of Altitudes.	Azimuth.
118.4	9° 30'		
118.0	10° 30'	76.3	50° 30'
117.6	11° 30'	74.7	51° 30'
117.2	12° 30'	73.1	52° 30'
116.7	13° 30'	71.4	53° 30'
116.2	14° 30'	69.7	54° 30'
115.6	15° 30'	68.0	55° 30'
115.1	16° 30'	66.2	56° 30'
114.4	17° 30'	64.5	57° 30'
113.8	18° 30'	62.7	58° 30'
113.1	19° 30'	60.9	59° 30'
112.4	20° 30'	59.1	60° 30'
111.7	21° 30'	57.3	61° 30'
110.9	22° 30'	55.4	62° 30'
110.0	23° 30'	53.5	63° 30'
109.2	24° 30'	51.7	64° 30'
108.3	25° 30'	49.8	65° 30'
107.4	26° 30'	47.8	66° 30'
106.4	27° 30'	45.9	67° 30'
105.5	28° 30'	44.0	68° 30'
104.4	29° 30'	42.0	69° 30'
103.4	30° 30'	40.1	70° 30'
102.3	31° 30'	38.1	71° 30'
101.2	32° 30'	36.1	72° 30'
100.1	33° 30'	34.1	73° 30'
98.9	34° 30'	32.1	74° 30'
97.7	35° 30'	30.0	75° 30'
96.5	36° 30'	28.0	76° 30'
95.2	37° 30'	26.0	77° 30'
93.9	38° 30'	23.9	78° 30'
92.6	39° 30'	21.9	79° 30'
91.2	40° 30'	19.8	80° 30'
89.9	41° 30'	17.7	81° 30'
88.5	42° 30'	15.7	82° 30'
87.0	43° 30'	13.6	83° 30'
85.6	44° 30'	11.5	84° 30'
84.1	45° 30'	9.4	85° 30'
82.6	46° 30'	7.3	86° 30'
81.1	47° 30'	5.2	87° 30'
79.5	48° 30'	3.1	88° 30'
77.9	49° 30'	1.0	89° 30'

TABLE VIII.

Difference of **Longitude** corresponding to 1' Difference of **Latitude**.

Lat. °	AZIMUTH.															
	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°
0	57.3	28.6	19.1	14.3	11.4	9.51	8.14	7.12	6.31	5.67	5.14	4.70	4.33	4.01	3.73	3.49
1	57.3	28.6	19.1	14.3	11.4	9.52	8.15	7.12	6.31	5.67	5.15	4.71	4.33	4.01	3.73	3.49
2	57.3	28.7	19.1	14.3	11.4	9.52	8.15	7.12	6.32	5.67	5.15	4.71	4.33	4.01	3.73	3.49
3	57.4	28.7	19.1	14.3	11.4	9.53	8.16	7.13	6.32	5.68	5.15	4.71	4.34	4.02	3.74	3.49
4	57.4	28.7	19.1	14.3	11.5	9.54	8.17	7.13	6.33	5.69	5.16	4.72	4.34	4.02	3.74	3.50
5	57.5	28.7	19.2	14.4	11.5	9.55	8.18	7.14	6.34	5.69	5.16	4.72	4.35	4.03	3.75	3.50
6	57.6	28.8	19.2	14.4	11.5	9.57	8.19	7.15	6.35	5.70	5.17	4.73	4.36	4.03	3.75	3.51
7	57.7	28.9	19.2	14.4	11.5	9.59	8.21	7.17	6.36	5.71	5.18	4.74	4.36	4.04	3.76	3.51
8	57.9	28.9	19.3	14.4	11.5	9.61	8.22	7.19	6.38	5.73	5.20	4.75	4.37	4.05	3.77	3.52
9	58.0	29.0	19.3	14.5	11.6	9.63	8.25	7.20	6.39	5.74	5.21	4.76	4.39	4.06	3.78	3.53
10	58.2	29.1	19.4	14.5	11.6	9.66	8.27	7.23	6.41	5.76	5.22	4.78	4.40	4.07	3.79	3.54
11	58.4	29.2	19.4	14.6	11.6	9.69	8.30	7.25	6.43	5.78	5.24	4.79	4.41	4.09	3.80	3.55
12	58.6	29.3	19.5	14.6	11.7	9.73	8.33	7.27	6.45	5.80	5.26	4.81	4.43	4.10	3.82	3.57
13	58.8	29.4	19.6	14.7	11.7	9.76	8.36	7.30	6.48	5.82	5.28	4.83	4.45	4.12	3.83	3.58
14	59.0	29.5	19.7	14.7	11.8	9.81	8.39	7.33	6.51	5.84	5.30	4.85	4.46	4.13	3.85	3.59
15	59.3	29.6	19.8	14.8	11.8	9.85	8.43	7.37	6.54	5.87	5.33	4.87	4.48	4.15	3.86	3.61
16	59.6	29.8	19.9	14.9	11.9	9.90	8.47	7.40	6.57	5.90	5.35	4.89	4.51	4.17	3.88	3.63
17	59.9	29.9	20.0	15.0	12.0	9.95	8.52	7.44	6.60	5.93	5.38	4.92	4.53	4.19	3.90	3.65
18	60.2	30.1	20.1	15.0	12.0	10.0	8.56	7.48	6.64	5.96	5.41	4.95	4.55	4.22	3.92	3.67
19	60.6	30.3	20.2	15.1	12.1	10.1	8.61	7.53	6.68	6.00	5.44	4.98	4.58	4.24	3.95	3.69
20	61.0	30.5	20.3	15.2	12.2	10.1	8.67	7.57	6.72	6.04	5.47	5.01	4.61	4.27	3.97	3.71
21	61.4	30.7	20.4	15.3	12.2	10.2	8.72	7.62	6.76	6.07	5.51	5.04	4.64	4.30	4.00	3.74
22	61.8	30.9	20.6	15.4	12.3	10.3	8.78	7.67	6.81	6.12	5.55	5.07	4.67	4.33	4.03	3.76
23	62.2	31.1	20.7	15.5	12.4	10.3	8.85	7.73	6.86	6.16	5.59	5.11	4.71	4.36	4.05	3.79
24	62.7	31.3	20.9	15.7	12.5	10.4	8.92	7.79	6.91	6.21	5.63	5.15	4.74	4.39	4.09	3.82
25	63.2	31.6	21.1	15.8	12.6	10.5	8.99	7.85	6.97	6.26	5.68	5.19	4.78	4.43	4.12	3.85
26	63.7	31.9	21.2	15.9	12.7	10.6	9.06	7.92	7.02	6.31	5.72	5.23	4.82	4.46	4.15	3.88
27	64.3	32.1	21.4	16.0	12.8	10.7	9.14	7.99	7.09	6.37	5.77	5.28	4.86	4.50	4.19	3.91
28	64.9	32.4	21.6	16.2	12.9	10.8	9.22	8.06	7.15	6.42	5.83	5.33	4.91	4.54	4.23	3.95
29	65.5	32.7	21.8	16.4	13.1	10.9	9.31	8.14	7.22	6.48	5.88	5.38	4.95	4.59	4.27	3.99
30	66.2	33.1	22.0	16.5	13.2	11.0	9.40	8.22	7.29	6.55	5.94	5.43	5.00	4.63	4.31	4.03
31	66.8	33.4	22.3	16.7	13.3	11.1	9.50	8.30	7.37	6.62	6.00	5.49	5.05	4.68	4.35	4.07
32	67.6	33.8	22.5	16.9	13.5	11.2	9.60	8.39	7.45	6.69	6.07	5.55	5.11	4.73	4.40	4.11
33	68.3	34.1	22.8	17.1	13.6	11.3	9.71	8.48	7.53	6.76	6.13	5.61	5.16	4.78	4.45	4.16
34	69.1	34.5	23.0	17.2	13.8	11.5	9.82	8.58	7.62	6.84	6.21	5.67	5.22	4.84	4.50	4.21
35	69.9	35.0	23.3	17.5	14.0	11.6	9.94	8.69	7.71	6.92	6.28	5.74	5.29	4.90	4.56	4.26
36	70.8	35.4	23.6	17.7	14.1	11.8	10.1	8.80	7.80	7.01	6.36	5.82	5.35	4.96	4.61	4.31
37	71.7	35.9	23.9	17.9	14.3	11.9	10.2	8.91	7.91	7.10	6.44	5.89	5.42	5.02	4.67	4.37
38	72.7	36.3	24.2	18.2	14.5	12.1	10.3	9.03	8.01	7.20	6.53	5.97	5.50	5.09	4.74	4.43
39	73.7	36.8	24.6	18.4	14.7	12.2	10.5	9.16	8.12	7.30	6.62	6.05	5.57	5.16	4.80	4.49
40	74.8	37.4	24.9	18.7	14.9	12.4	10.6	9.29	8.24	7.40	6.72	6.14	5.65	5.24	4.87	4.55
41	75.9	37.9	25.3	18.9	15.1	12.6	10.8	9.43	8.37	7.51	6.82	6.23	5.74	5.31	4.95	4.62
42	77.1	38.5	25.7	19.2	15.4	12.8	11.0	9.57	8.50	7.63	6.92	6.33	5.83	5.40	5.02	4.69
43	78.3	39.2	26.1	19.6	15.6	13.0	11.1	9.73	8.63	7.75	7.03	6.43	5.92	5.48	5.10	4.77
44	79.6	39.8	26.5	19.9	15.9	13.2	11.3	9.89	8.78	7.88	7.15	6.54	6.02	5.58	5.19	4.85
45	81.0	40.5	27.0	20.2	16.2	13.5	11.5	10.1	8.93	8.02	7.28	6.65	6.13	5.67	5.28	4.93
46	82.5	41.2	27.5	20.6	16.5	13.7	11.7	10.2	9.09	8.16	7.41	6.77	6.24	5.77	5.37	5.02
47	84.0	42.0	28.0	21.0	16.8	14.0	11.9	10.4	9.26	8.32	7.54	6.90	6.35	5.88	5.47	5.11
48	85.6	42.8	28.5	21.4	17.1	14.2	12.2	10.6	9.44	8.48	7.69	7.03	6.47	5.99	5.53	5.21
49	87.3	43.6	29.1	21.8	17.4	14.5	12.4	10.8	9.62	8.64	7.84	7.17	6.60	6.11	5.69	5.32
50	89.1	44.6	29.7	22.2	17.8	14.8	12.7	11.1	9.82	8.82	8.00	7.32	6.74	6.24	5.81	5.43
51	91.0	45.5	30.3	22.7	18.2	15.1	12.9	11.3	10.0	9.01	8.17	7.48	6.88	6.37	5.93	5.54
52	93.1	46.5	31.0	23.2	18.6	15.5	13.2	11.6	10.3	9.21	8.36	7.64	7.04	6.51	6.06	5.66
53	95.2	47.6	31.7	23.8	19.0	15.8	13.5	11.8	10.5	9.42	8.55	7.82	7.20	6.66	6.20	5.79
54	97.5	48.7	32.5	24.3	19.4	16.2	13.9	12.1	10.7	9.65	8.75	8.00	7.37	6.82	6.35	5.93
55	99.9	49.9	33.3	24.9	19.9	16.6	14.2	12.4	11.0	9.89	8.97	8.20	7.55	6.99	6.51	6.08
56	102	51.2	34.1	25.6	20.4	17.0	14.6	12.7	11.3	10.1	9.20	8.41	7.75	7.17	6.67	6.24
57	105	52.6	35.0	26.3	21.0	17.5	15.0	13.1	11.6	10.4	9.45	8.64	7.95	7.36	6.85	6.40
58	108	54.0	36.0	27.0	21.6	18.0	15.4	13.4	11.9	10.7	9.71	8.88	8.17	7.57	7.04	6.58
59	111	55.6	37.0	27.8	22.2	18.5	15.8	13.8	12.3	11.0	9.99	9.13	8.41	7.79	7.25	6.77
60	115	57.3	38.2	28.6	22.9	19.0	16.3	14.2	12.6	11.3	10.3	9.41	8.66	8.02	7.46	6.97

TABLE VIII.—*continued.*Difference of **Longitude** corresponding to 1' Difference of **Latitude**—*continued.*

Lat. °	AZIMUTH.																
	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°
0	3.27	3.08	2.90	2.75	2.60	2.48	2.36	2.25	2.14	2.05	1.96	1.88	1.80	1.73	1.66	1.60	1.54
1	3.27	3.08	2.90	2.75	2.61	2.48	2.36	2.25	2.14	2.05	1.96	1.88	1.80	1.73	1.66	1.60	1.54
2	3.27	3.08	2.91	2.75	2.61	2.48	2.36	2.25	2.15	2.05	1.96	1.88	1.81	1.73	1.67	1.60	1.54
3	3.28	3.08	2.91	2.75	2.61	2.48	2.36	2.25	2.15	2.05	1.97	1.88	1.81	1.73	1.67	1.60	1.54
4	3.28	3.09	2.91	2.75	2.61	2.48	2.36	2.25	2.15	2.06	1.97	1.89	1.81	1.74	1.67	1.60	1.54
5	3.28	3.09	2.92	2.76	2.62	2.48	2.36	2.25	2.15	2.06	1.97	1.89	1.81	1.74	1.67	1.61	1.55
6	3.29	3.09	2.92	2.76	2.62	2.49	2.37	2.26	2.16	2.06	1.97	1.89	1.81	1.74	1.67	1.61	1.55
7	3.30	3.10	2.93	2.77	2.62	2.49	2.37	2.26	2.16	2.07	1.98	1.89	1.82	1.75	1.68	1.61	1.55
8	3.30	3.11	2.93	2.77	2.63	2.50	2.38	2.27	2.17	2.07	1.98	1.90	1.82	1.75	1.68	1.62	1.55
9	3.31	3.12	2.94	2.78	2.64	2.51	2.39	2.27	2.17	2.08	1.99	1.90	1.83	1.75	1.69	1.62	1.56
10	3.32	3.13	2.95	2.79	2.65	2.51	2.39	2.28	2.18	2.08	1.99	1.91	1.83	1.76	1.69	1.62	1.56
11	3.33	3.14	2.96	2.80	2.65	2.52	2.40	2.29	2.18	2.09	2.00	1.92	1.84	1.76	1.70	1.63	1.57
12	3.34	3.15	2.97	2.81	2.66	2.53	2.41	2.30	2.19	2.10	2.01	1.92	1.84	1.77	1.70	1.64	1.57
13	3.36	3.16	2.98	2.82	2.67	2.54	2.42	2.31	2.20	2.10	2.01	1.93	1.85	1.78	1.71	1.64	1.58
14	3.37	3.17	2.99	2.83	2.68	2.55	2.43	2.31	2.21	2.11	2.02	1.94	1.86	1.79	1.72	1.65	1.59
15	3.39	3.19	3.01	2.84	2.70	2.56	2.44	2.33	2.22	2.12	2.03	1.95	1.87	1.79	1.72	1.66	1.59
16	3.40	3.20	3.02	2.86	2.71	2.57	2.45	2.34	2.23	2.13	2.04	1.96	1.88	1.80	1.73	1.67	1.60
17	3.42	3.22	3.04	2.87	2.72	2.59	2.46	2.35	2.24	2.14	2.05	1.97	1.89	1.81	1.74	1.67	1.61
18	3.44	3.24	3.05	2.89	2.74	2.60	2.48	2.36	2.25	2.16	2.06	1.98	1.90	1.82	1.75	1.68	1.62
19	3.46	3.26	3.07	2.91	2.76	2.62	2.49	2.38	2.27	2.17	2.08	1.99	1.91	1.83	1.76	1.69	1.63
20	3.48	3.28	3.09	2.92	2.77	2.63	2.51	2.39	2.28	2.18	2.09	2.00	1.92	1.84	1.77	1.70	1.64
21	3.50	3.30	3.11	2.94	2.79	2.65	2.52	2.41	2.30	2.20	2.10	2.01	1.93	1.86	1.78	1.71	1.65
22	3.53	3.32	3.13	2.96	2.81	2.67	2.54	2.42	2.31	2.21	2.12	2.03	1.95	1.87	1.79	1.73	1.66
23	3.55	3.34	3.16	2.98	2.83	2.69	2.56	2.44	2.33	2.23	2.13	2.04	1.96	1.88	1.81	1.74	1.67
24	3.58	3.37	3.18	3.01	2.85	2.71	2.58	2.46	2.35	2.24	2.15	2.06	1.97	1.90	1.82	1.75	1.69
25	3.61	3.40	3.20	3.03	2.87	2.73	2.60	2.48	2.37	2.26	2.17	2.08	1.99	1.91	1.84	1.77	1.70
26	3.64	3.42	3.23	3.06	2.90	2.75	2.62	2.50	2.39	2.28	2.18	2.09	2.01	1.93	1.85	1.78	1.71
27	3.67	3.45	3.26	3.08	2.92	2.78	2.64	2.52	2.41	2.30	2.20	2.11	2.02	1.94	1.87	1.80	1.73
28	3.70	3.49	3.29	3.11	2.95	2.80	2.67	2.54	2.43	2.32	2.22	2.13	2.04	1.96	1.88	1.81	1.74
29	3.74	3.52	3.32	3.14	2.98	2.83	2.69	2.57	2.45	2.34	2.24	2.15	2.06	1.98	1.90	1.83	1.76
30	3.78	3.55	3.35	3.17	3.01	2.86	2.72	2.59	2.48	2.37	2.27	2.17	2.08	2.00	1.92	1.85	1.78
31	3.82	3.59	3.39	3.21	3.04	2.89	2.75	2.62	2.50	2.39	2.29	2.19	2.10	2.02	1.94	1.87	1.80
32	3.86	3.63	3.42	3.24	3.07	2.92	2.78	2.65	2.53	2.42	2.31	2.22	2.13	2.04	1.96	1.89	1.82
33	3.90	3.67	3.46	3.28	3.11	2.95	2.81	2.68	2.56	2.44	2.34	2.24	2.15	2.07	1.98	1.91	1.84
34	3.95	3.71	3.50	3.31	3.14	2.99	2.84	2.71	2.59	2.47	2.37	2.27	2.18	2.09	2.01	1.93	1.86
35	3.99	3.76	3.55	3.35	3.18	3.02	2.88	2.74	2.62	2.50	2.40	2.30	2.20	2.11	2.03	1.95	1.88
36	4.04	3.80	3.59	3.40	3.22	3.06	2.91	2.78	2.65	2.53	2.43	2.32	2.23	2.14	2.06	1.98	1.90
37	4.10	3.85	3.64	3.44	3.26	3.10	2.95	2.81	2.69	2.57	2.46	2.35	2.26	2.17	2.08	2.00	1.93
38	4.15	3.91	3.69	3.49	3.31	3.14	2.99	2.85	2.72	2.60	2.49	2.39	2.29	2.20	2.11	2.03	1.95
39	4.21	3.96	3.74	3.54	3.35	3.18	3.03	2.89	2.76	2.64	2.53	2.42	2.32	2.23	2.14	2.06	1.98
40	4.27	4.02	3.79	3.59	3.40	3.23	3.08	2.93	2.80	2.68	2.56	2.46	2.36	2.26	2.17	2.09	2.01
41	4.33	4.08	3.85	3.64	3.45	3.28	3.12	2.98	2.84	2.72	2.60	2.49	2.39	2.29	2.21	2.12	2.04
42	4.40	4.14	3.91	3.70	3.50	3.33	3.17	3.02	2.89	2.76	2.64	2.53	2.43	2.33	2.24	2.15	2.07
43	4.47	4.21	3.97	3.76	3.56	3.38	3.22	3.07	2.93	2.80	2.68	2.57	2.47	2.37	2.28	2.19	2.11
44	4.55	4.28	4.04	3.82	3.62	3.44	3.28	3.12	2.98	2.85	2.73	2.61	2.51	2.41	2.31	2.22	2.14
45	4.63	4.35	4.11	3.89	3.68	3.50	3.33	3.18	3.03	2.90	2.78	2.66	2.55	2.45	2.35	2.26	2.18
46	4.71	4.43	4.18	3.96	3.75	3.56	3.39	3.23	3.09	2.95	2.83	2.71	2.60	2.49	2.40	2.30	2.22
47	4.80	4.51	4.26	4.03	3.82	3.63	3.45	3.29	3.14	3.01	2.88	2.76	2.65	2.54	2.44	2.35	2.26
48	4.89	4.60	4.34	4.11	3.89	3.70	3.52	3.36	3.20	3.06	2.93	2.81	2.70	2.59	2.49	2.39	2.30
49	4.99	4.69	4.43	4.19	3.97	3.77	3.59	3.42	3.27	3.13	2.99	2.87	2.75	2.64	2.54	2.44	2.35
50	5.09	4.79	4.52	4.27	4.05	3.85	3.67	3.49	3.34	3.19	3.05	2.93	2.81	2.69	2.59	2.49	2.40
51	5.20	4.89	4.61	4.37	4.14	3.93	3.74	3.57	3.41	3.26	3.12	2.99	2.87	2.75	2.64	2.54	2.45
52	5.31	5.00	4.72	4.46	4.23	4.02	3.83	3.65	3.48	3.33	3.19	3.05	2.93	2.81	2.70	2.60	2.50
53	5.43	5.11	4.83	4.57	4.33	4.11	3.91	3.73	3.56	3.41	3.26	3.12	3.00	2.88	2.77	2.66	2.56
54	5.56	5.24	4.94	4.67	4.43	4.21	4.01	3.82	3.65	3.49	3.34	3.20	3.07	2.95	2.83	2.72	2.62
55	5.70	5.37	5.06	4.79	4.54	4.32	4.11	3.92	3.74	3.57	3.42	3.28	3.15	3.02	2.90	2.79	2.68
56	5.85	5.50	5.19	4.91	4.66	4.43	4.21	4.02	3.83	3.67	3.51	3.36	3.23	3.10	2.98	2.86	2.75
57	6.01	5.65	5.33	5.04	4.78	4.54	4.33	4.12	3.94	3.76	3.60	3.45	3.31	3.18	3.06	2.94	2.83
58	6.17	5.81	5.48	5.18	4.92	4.67	4.45	4.24	4.05	3.87	3.70	3.55	3.40	3.27	3.14	3.02	2.91
59	6.35	5.98	5.64	5.33	5.06	4.81	4.57	4.36	4.16	3.98	3.81	3.65	3.50	3.36	3.23	3.11	2.99
60	6.54	6.16	5.81	5.49	5.21	4.95	4.71	4.49	4.29	4.10	3.93	3.76	3.61	3.46	3.33	3.20	3.08

TABLE VIII.—*continued.*Difference of **Longitude** corresponding to 1' Difference of **Latitude**—*continued.*

Lat. °	AZIMUTH.																
	34°	35°	36°	37°	38°	39°	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°
0	1.48	1.43	1.38	1.33	1.28	1.23	1.19	1.15	1.11	1.07	1.04	1.00	.97	.93	.90	.87	.84
1	1.48	1.43	1.38	1.33	1.28	1.24	1.19	1.15	1.11	1.07	1.04	1.00	.97	.93	.90	.87	.84
2	1.48	1.43	1.38	1.33	1.28	1.24	1.19	1.15	1.11	1.07	1.04	1.00	.97	.93	.90	.87	.84
3	1.48	1.43	1.38	1.33	1.28	1.24	1.19	1.15	1.11	1.07	1.04	1.00	.97	.93	.90	.87	.84
4	1.49	1.43	1.38	1.33	1.28	1.24	1.19	1.15	1.11	1.07	1.04	1.00	.97	.93	.90	.87	.84
5	1.49	1.43	1.38	1.33	1.28	1.24	1.20	1.15	1.11	1.08	1.04	1.00	.97	.94	.90	.87	.84
6	1.49	1.44	1.38	1.33	1.29	1.24	1.20	1.16	1.12	1.08	1.04	1.01	.97	.94	.91	.87	.84
7	1.49	1.44	1.39	1.34	1.29	1.24	1.20	1.16	1.12	1.08	1.04	1.01	.97	.94	.91	.88	.85
8	1.50	1.44	1.39	1.34	1.29	1.25	1.20	1.16	1.12	1.08	1.05	1.01	.98	.94	.91	.88	.85
9	1.50	1.45	1.39	1.34	1.30	1.25	1.21	1.16	1.12	1.09	1.05	1.01	.98	.94	.91	.88	.85
10	1.51	1.45	1.40	1.35	1.30	1.25	1.21	1.17	1.13	1.09	1.05	1.02	.98	.95	.91	.88	.85
11	1.51	1.45	1.40	1.35	1.30	1.26	1.21	1.17	1.13	1.09	1.05	1.02	.98	.95	.92	.89	.85
12	1.52	1.46	1.41	1.36	1.31	1.26	1.22	1.18	1.14	1.10	1.06	1.02	.99	.95	.92	.89	.86
13	1.52	1.47	1.41	1.36	1.31	1.27	1.22	1.18	1.14	1.10	1.06	1.03	.99	.96	.92	.89	.86
14	1.53	1.47	1.42	1.37	1.32	1.27	1.23	1.19	1.14	1.11	1.07	1.03	.99	.96	.93	.90	.86
15	1.53	1.48	1.42	1.37	1.33	1.28	1.23	1.19	1.15	1.11	1.07	1.04	1.00	.97	.93	.90	.87
16	1.54	1.49	1.43	1.38	1.33	1.28	1.24	1.20	1.16	1.12	1.08	1.04	1.00	.97	.94	.90	.87
17	1.55	1.49	1.44	1.39	1.34	1.29	1.25	1.20	1.16	1.12	1.08	1.05	1.01	.98	.94	.91	.88
18	1.56	1.50	1.45	1.40	1.35	1.30	1.25	1.21	1.17	1.13	1.09	1.05	1.02	.98	.95	.91	.88
19	1.57	1.51	1.46	1.40	1.35	1.31	1.26	1.22	1.17	1.13	1.10	1.06	1.02	.99	.95	.92	.89
20	1.58	1.52	1.46	1.41	1.36	1.31	1.27	1.22	1.18	1.14	1.10	1.06	1.03	.99	.96	.93	.89
21	1.59	1.53	1.47	1.42	1.37	1.32	1.28	1.23	1.19	1.15	1.11	1.07	1.03	1.00	.96	.93	.90
22	1.60	1.54	1.48	1.43	1.38	1.33	1.29	1.24	1.20	1.16	1.12	1.08	1.04	1.01	.97	.94	.90
23	1.61	1.55	1.50	1.44	1.39	1.34	1.29	1.25	1.21	1.16	1.12	1.09	1.05	1.01	.98	.94	.91
24	1.62	1.56	1.51	1.45	1.40	1.35	1.30	1.26	1.22	1.17	1.13	1.09	1.06	1.02	.99	.95	.92
25	1.64	1.58	1.52	1.46	1.41	1.36	1.31	1.27	1.23	1.18	1.14	1.10	1.07	1.03	.99	.96	.93
26	1.65	1.59	1.53	1.48	1.42	1.37	1.33	1.28	1.24	1.19	1.15	1.11	1.07	1.04	1.00	.97	.93
27	1.66	1.60	1.54	1.49	1.44	1.39	1.34	1.29	1.25	1.20	1.16	1.12	1.08	1.05	1.01	.98	.94
28	1.68	1.62	1.56	1.50	1.45	1.40	1.35	1.30	1.26	1.21	1.17	1.13	1.09	1.06	1.02	.98	.95
29	1.70	1.63	1.57	1.52	1.46	1.41	1.36	1.32	1.27	1.23	1.18	1.14	1.10	1.07	1.03	.99	.96
30	1.71	1.65	1.59	1.53	1.48	1.43	1.38	1.33	1.28	1.24	1.20	1.15	1.12	1.08	1.04	1.00	.97
31	1.73	1.67	1.61	1.55	1.49	1.44	1.39	1.34	1.30	1.25	1.21	1.17	1.13	1.09	1.05	1.01	.98
32	1.75	1.68	1.62	1.56	1.51	1.46	1.41	1.36	1.31	1.26	1.22	1.18	1.14	1.10	1.06	1.03	.99
33	1.77	1.70	1.64	1.58	1.53	1.47	1.42	1.37	1.32	1.28	1.23	1.19	1.15	1.11	1.07	1.04	1.00
34	1.79	1.72	1.66	1.60	1.54	1.49	1.44	1.39	1.34	1.29	1.25	1.21	1.16	1.12	1.09	1.05	1.01
35	1.81	1.74	1.68	1.62	1.56	1.51	1.45	1.40	1.36	1.31	1.26	1.22	1.18	1.14	1.10	1.06	1.02
36	1.83	1.77	1.70	1.64	1.58	1.53	1.47	1.42	1.37	1.33	1.28	1.24	1.19	1.15	1.11	1.07	1.04
37	1.86	1.79	1.72	1.66	1.60	1.55	1.49	1.44	1.39	1.34	1.30	1.25	1.21	1.17	1.13	1.09	1.05
38	1.88	1.81	1.75	1.68	1.62	1.57	1.51	1.46	1.41	1.36	1.31	1.27	1.23	1.18	1.14	1.10	1.06
39	1.91	1.84	1.77	1.71	1.65	1.59	1.53	1.48	1.43	1.38	1.33	1.29	1.24	1.20	1.16	1.12	1.08
40	1.94	1.86	1.80	1.73	1.67	1.61	1.56	1.50	1.45	1.40	1.35	1.31	1.26	1.22	1.18	1.13	1.10
41	1.96	1.89	1.82	1.76	1.70	1.64	1.58	1.52	1.47	1.42	1.37	1.33	1.28	1.24	1.19	1.15	1.11
42	1.99	1.92	1.85	1.79	1.72	1.66	1.60	1.55	1.49	1.44	1.39	1.35	1.30	1.25	1.21	1.17	1.13
43	2.03	1.95	1.88	1.81	1.75	1.69	1.63	1.57	1.52	1.47	1.42	1.37	1.32	1.28	1.23	1.19	1.15
44	2.06	1.99	1.91	1.84	1.78	1.72	1.66	1.60	1.54	1.49	1.44	1.39	1.34	1.30	1.25	1.21	1.17
45	2.10	2.02	1.95	1.88	1.81	1.75	1.69	1.63	1.57	1.52	1.46	1.41	1.37	1.32	1.27	1.23	1.19
46	2.13	2.06	1.98	1.91	1.84	1.78	1.72	1.66	1.60	1.54	1.49	1.44	1.39	1.34	1.30	1.25	1.21
47	2.17	2.09	2.02	1.95	1.88	1.81	1.75	1.69	1.63	1.57	1.52	1.47	1.42	1.37	1.32	1.27	1.23
48	2.22	2.13	2.06	1.98	1.91	1.85	1.78	1.72	1.66	1.60	1.55	1.49	1.44	1.39	1.35	1.30	1.25
49	2.26	2.18	2.10	2.02	1.95	1.88	1.82	1.75	1.69	1.63	1.58	1.52	1.47	1.42	1.37	1.33	1.28
50	2.31	2.22	2.14	2.06	1.99	1.92	1.85	1.79	1.73	1.67	1.61	1.56	1.50	1.45	1.40	1.35	1.31
51	2.36	2.27	2.19	2.11	2.03	1.96	1.89	1.83	1.76	1.70	1.65	1.59	1.53	1.48	1.43	1.38	1.33
52	2.41	2.32	2.24	2.16	2.08	2.01	1.94	1.87	1.80	1.74	1.68	1.62	1.57	1.51	1.46	1.41	1.36
53	2.46	2.37	2.29	2.21	2.13	2.05	1.98	1.91	1.85	1.78	1.72	1.66	1.60	1.55	1.50	1.44	1.39
54	2.52	2.43	2.34	2.26	2.18	2.10	2.03	1.96	1.89	1.82	1.76	1.70	1.64	1.59	1.53	1.48	1.43
55	2.58	2.49	2.40	2.31	2.23	2.15	2.08	2.01	1.94	1.87	1.81	1.74	1.68	1.63	1.57	1.52	1.46
56	2.65	2.55	2.46	2.37	2.29	2.21	2.13	2.06	1.99	1.92	1.85	1.79	1.73	1.67	1.61	1.55	1.50
57	2.72	2.62	2.53	2.44	2.35	2.27	2.19	2.11	2.04	1.97	1.90	1.84	1.77	1.71	1.65	1.60	1.54
58	2.80	2.70	2.60	2.50	2.42	2.33	2.25	2.17	2.10	2.02	1.95	1.89	1.82	1.76	1.70	1.64	1.58
59	2.88	2.77	2.67	2.58	2.49	2.40	2.31	2.23	2.16	2.08	2.01	1.94	1.87	1.81	1.75	1.69	1.63
60	2.97	2.86	2.75	2.65	2.56	2.47	2.38	2.30	2.22	2.14	2.07	2.00	1.93	1.87	1.80	1.74	1.68

TABLE VIII.—*continued.*Difference of **Longitude** corresponding to 1' Difference of **Latitude**—*continued.*

Lat. °	AZIMUTH.																			
	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	61°	62°	63°	64°	65°	66°	67°	68°	69°	70°
0	·81	·78	·75	·73	·70	·67	·65	·62	·60	·58	·55	·53	·51	·49	·47	·45	·42	·40	·38	·36
1	·81	·78	·75	·73	·70	·67	·65	·62	·60	·58	·55	·53	·51	·49	·47	·45	·42	·40	·38	·36
2	·81	·78	·75	·73	·70	·67	·65	·63	·60	·58	·55	·53	·51	·49	·47	·45	·42	·40	·38	·36
3	·81	·78	·75	·73	·70	·68	·65	·63	·60	·58	·56	·53	·51	·49	·47	·45	·43	·40	·38	·36
4	·81	·78	·76	·73	·70	·68	·65	·63	·60	·58	·56	·53	·51	·49	·47	·45	·43	·41	·38	·36
5	·81	·78	·76	·73	·70	·68	·65	·63	·60	·58	·56	·53	·51	·49	·47	·45	·43	·41	·39	·37
6	·81	·79	·76	·73	·70	·68	·65	·63	·60	·58	·56	·53	·51	·49	·47	·45	·43	·41	·39	·37
7	·82	·79	·76	·73	·71	·68	·65	·63	·61	·58	·56	·54	·51	·49	·47	·45	·43	·41	·39	·37
8	·82	·79	·76	·73	·71	·68	·66	·63	·61	·58	·56	·54	·51	·49	·47	·45	·43	·41	·39	·37
9	·82	·79	·76	·74	·71	·68	·66	·63	·61	·58	·56	·54	·52	·49	·47	·45	·43	·41	·39	·37
10	·82	·79	·77	·74	·71	·68	·66	·63	·61	·59	·56	·54	·52	·50	·47	·45	·43	·41	·39	·37
11	·82	·80	·77	·74	·71	·69	·66	·64	·61	·59	·56	·54	·52	·50	·48	·45	·43	·41	·39	·37
12	·83	·80	·77	·74	·72	·69	·66	·64	·61	·59	·57	·54	·52	·50	·48	·46	·43	·41	·39	·37
13	·83	·80	·77	·75	·72	·69	·67	·64	·62	·59	·57	·55	·52	·50	·48	·46	·44	·41	·39	·37
14	·83	·81	·78	·75	·72	·70	·67	·64	·62	·60	·57	·55	·52	·50	·48	·46	·44	·42	·40	·38
15	·84	·81	·78	·75	·72	·70	·67	·65	·62	·60	·57	·55	·53	·50	·48	·46	·44	·42	·40	·38
16	·84	·81	·78	·76	·73	·70	·68	·65	·63	·60	·58	·55	·53	·51	·49	·46	·44	·42	·40	·38
17	·85	·82	·79	·76	·73	·71	·68	·65	·63	·60	·58	·56	·53	·51	·49	·47	·44	·42	·40	·38
18	·85	·82	·79	·76	·74	·71	·68	·66	·63	·61	·58	·56	·54	·51	·49	·47	·45	·42	·40	·38
19	·86	·83	·80	·77	·74	·71	·69	·66	·64	·61	·59	·56	·54	·52	·49	·47	·45	·43	·41	·38
20	·86	·83	·80	·77	·75	·72	·69	·66	·64	·61	·59	·57	·54	·52	·50	·47	·45	·43	·41	·39
21	·87	·84	·81	·78	·75	·72	·70	·67	·64	·62	·59	·57	·54	·52	·50	·48	·45	·43	·41	·39
22	·87	·84	·81	·78	·76	·73	·70	·67	·65	·62	·60	·57	·55	·53	·50	·48	·46	·44	·41	·39
23	·88	·85	·82	·79	·76	·73	·71	·68	·65	·63	·60	·58	·55	·53	·51	·48	·46	·44	·42	·40
24	·89	·86	·82	·80	·77	·74	·71	·68	·66	·63	·61	·58	·56	·53	·51	·49	·46	·44	·42	·40
25	·89	·86	·83	·80	·77	·74	·72	·69	·66	·64	·61	·59	·56	·54	·51	·49	·47	·45	·42	·40
26	·90	·87	·84	·81	·78	·75	·72	·70	·67	·64	·62	·59	·57	·54	·52	·50	·47	·45	·43	·40
27	·91	·88	·85	·82	·79	·76	·73	·70	·67	·65	·62	·60	·57	·55	·52	·50	·48	·45	·43	·41
28	·92	·88	·85	·82	·79	·76	·74	·71	·68	·65	·63	·60	·58	·55	·53	·50	·48	·46	·43	·41
29	·93	·89	·86	·83	·80	·77	·74	·71	·69	·66	·63	·61	·58	·56	·53	·51	·49	·46	·44	·42
30	·94	·90	·87	·84	·81	·78	·75	·72	·69	·67	·64	·61	·59	·56	·54	·51	·49	·47	·44	·42
31	·94	·91	·88	·85	·82	·79	·76	·73	·70	·67	·65	·62	·59	·57	·54	·52	·50	·47	·45	·42
32	·95	·92	·89	·86	·83	·80	·77	·74	·71	·68	·65	·63	·60	·58	·55	·53	·50	·48	·45	·43
33	·97	·93	·90	·87	·83	·80	·77	·75	·72	·69	·66	·63	·61	·58	·56	·53	·51	·48	·46	·43
34	·98	·94	·91	·88	·84	·81	·78	·75	·72	·70	·67	·64	·61	·59	·56	·54	·51	·49	·46	·44
35	·99	·95	·92	·89	·85	·82	·79	·76	·73	·70	·68	·65	·62	·60	·57	·54	·52	·49	·47	·44
36	1·00	·97	·93	·90	·87	·83	·80	·77	·74	·71	·69	·66	·63	·60	·58	·55	·52	·50	·47	·45
37	1·01	·98	·94	·91	·88	·84	·81	·78	·75	·72	·69	·67	·64	·61	·58	·56	·53	·51	·48	·46
38	1·03	·99	·96	·92	·89	·86	·82	·79	·76	·73	·70	·67	·65	·62	·59	·57	·54	·51	·49	·46
39	1·04	1·01	·97	·93	·90	·87	·84	·80	·77	·74	·71	·68	·66	·63	·60	·57	·55	·52	·49	·47
40	1·06	1·02	·98	·95	·91	·88	·85	·82	·78	·75	·72	·69	·67	·64	·61	·58	·55	·53	·50	·48
41	1·07	1·04	1·00	·96	·93	·89	·86	·83	·80	·76	·73	·70	·68	·65	·62	·59	·56	·54	·51	·48
42	1·09	1·05	1·01	·98	·94	·91	·87	·84	·81	·78	·75	·72	·69	·66	·63	·60	·57	·54	·52	·49
43	1·11	1·07	1·03	·99	·96	·92	·89	·85	·82	·79	·76	·73	·70	·67	·64	·61	·58	·55	·52	·50
44	1·13	1·09	1·05	1·01	·97	·94	·90	·87	·84	·80	·77	·74	·71	·68	·65	·62	·59	·56	·53	·51
45	1·15	1·10	1·07	1·03	·99	·95	·92	·88	·85	·82	·78	·75	·72	·69	·66	·63	·60	·57	·54	·51
46	1·17	1·12	1·08	1·05	1·01	·97	·93	·90	·86	·83	·80	·77	·73	·70	·67	·64	·61	·58	·55	·52
47	1·19	1·15	1·10	1·07	1·03	·99	·95	·92	·88	·85	·81	·78	·75	·72	·68	·65	·62	·59	·56	·53
48	1·21	1·17	1·13	1·09	1·05	1·01	·97	·93	·90	·86	·83	·79	·76	·73	·70	·67	·63	·60	·57	·54
49	1·23	1·19	1·15	1·11	1·07	1·03	·99	·95	·92	·88	·84	·81	·78	·74	·71	·68	·65	·62	·59	·55
50	1·26	1·22	1·17	1·13	1·09	1·05	1·01	·97	·93	·90	·86	·83	·79	·76	·73	·69	·66	·63	·60	·57
51	1·29	1·24	1·20	1·15	1·11	1·07	1·03	·99	·95	·92	·88	·84	·81	·78	·74	·71	·67	·64	·61	·58
52	1·32	1·27	1·22	1·18	1·14	1·10	1·05	1·02	·98	·94	·90	·86	·83	·79	·76	·72	·69	·66	·62	·59
53	1·35	1·30	1·25	1·21	1·16	1·12	1·08	1·04	1·00	·96	·92	·88	·85	·81	·77	·74	·71	·67	·64	·60
54	1·38	1·33	1·28	1·24	1·19	1·15	1·10	1·06	1·02	·98	·94	·90	·87	·83	·79	·76	·72	·69	·65	·62
55	1·41	1·36	1·31	1·27	1·22	1·18	1·13	1·09	1·05	1·01	·97	·93	·89	·85	·81	·78	·74	·70	·67	·63
56	1·45	1·40	1·35	1·30	1·25	1·21	1·16	1·12	1·07	1·03	·99	·95	·91	·87	·83	·80	·76	·72	·69	·65
57	1·49	1·43	1·38	1·33	1·29	1·24	1·19	1·15	1·10	1·06	1·02	·98	·94	·90	·86	·82	·78	·74	·70	·67
58	1·53	1·47	1·42	1·37	1·32	1·27	1·23	1·18	1·13	1·09	1·05	1·00	·96	·92	·88	·84	·80	·76	·72	·69
59	1·57	1·52	1·46	1·41	1·36	1·31	1·26	1·21	1·17	1·12	1·08	1·03	·99	·95	·91	·86	·82	·78	·75	·71
60	1·62	1·56	1·51	1·45	1·40	1·35	1·30	1·25	1·20	1·15	1·11	1·06	1·02	·98	·93	·89	·85	·81	·77	·73

TABLE VIII.—*continued.*Difference of **Longitude** corresponding to 1' Difference of **Latitude**—*continued.*

Lat. °	AZIMUTH.																		
	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	81°	82°	83°	84°	85°	86°	87°	88°	89°
0	·34	·32	·31	·29	·27	·25	·23	·21	·19	·18	·16	·14	·12	·11	·09	·07	·05	·03	·02
1	·34	·32	·31	·29	·27	·25	·23	·21	·19	·18	·16	·14	·12	·11	·09	·07	·05	·03	·02
2	·34	·33	·31	·29	·27	·25	·23	·21	·19	·18	·16	·14	·12	·11	·09	·07	·05	·03	·02
3	·34	·33	·31	·29	·27	·25	·23	·21	·19	·18	·16	·14	·12	·11	·09	·07	·05	·03	·02
4	·35	·33	·31	·29	·27	·25	·23	·21	·19	·18	·16	·14	·12	·11	·09	·07	·05	·04	·02
5	·35	·33	·31	·29	·27	·25	·23	·21	·20	·18	·16	·14	·12	·11	·09	·07	·05	·04	·02
6	·35	·33	·31	·29	·27	·25	·23	·21	·20	·18	·16	·14	·12	·11	·09	·07	·05	·04	·02
7	·35	·33	·31	·29	·27	·25	·23	·21	·20	·18	·16	·14	·12	·11	·09	·07	·05	·04	·02
8	·35	·33	·31	·29	·27	·25	·23	·21	·20	·18	·16	·14	·12	·11	·09	·07	·05	·04	·02
9	·35	·33	·31	·29	·27	·25	·23	·22	·20	·18	·16	·14	·12	·11	·09	·07	·05	·04	·02
10	·35	·33	·31	·29	·27	·25	·23	·22	·20	·18	·16	·14	·12	·11	·09	·07	·05	·04	·02
11	·35	·33	·31	·29	·27	·25	·24	·22	·20	·18	·16	·14	·13	·11	·09	·07	·05	·04	·02
12	·35	·33	·31	·29	·27	·25	·24	·22	·20	·18	·16	·14	·13	·11	·09	·07	·05	·04	·02
13	·35	·33	·31	·29	·27	·26	·24	·22	·20	·18	·16	·14	·13	·11	·09	·07	·05	·04	·02
14	·35	·33	·32	·30	·28	·26	·24	·22	·20	·18	·16	·14	·13	·11	·09	·07	·05	·04	·02
15	·36	·34	·32	·30	·28	·26	·24	·22	·20	·18	·16	·15	·13	·11	·09	·07	·05	·04	·02
16	·36	·34	·32	·30	·28	·26	·24	·22	·20	·18	·16	·15	·13	·11	·09	·07	·05	·04	·02
17	·36	·34	·32	·30	·28	·26	·24	·22	·20	·18	·17	·15	·13	·11	·09	·07	·05	·04	·02
18	·36	·34	·32	·30	·28	·26	·24	·22	·20	·19	·17	·15	·13	·11	·09	·07	·06	·04	·02
19	·36	·34	·32	·30	·28	·26	·24	·22	·21	·19	·17	·15	·13	·11	·09	·07	·06	·04	·02
20	·37	·35	·33	·31	·29	·27	·25	·23	·21	·19	·17	·15	·13	·11	·09	·07	·06	·04	·02
21	·37	·35	·33	·31	·29	·27	·25	·23	·21	·19	·17	·15	·13	·11	·09	·07	·06	·04	·02
22	·37	·35	·33	·31	·29	·27	·25	·23	·21	·19	·17	·15	·13	·11	·09	·08	·06	·04	·02
23	·37	·35	·33	·31	·29	·27	·25	·23	·21	·19	·17	·15	·13	·11	·10	·08	·06	·04	·02
24	·38	·36	·33	·31	·29	·27	·25	·23	·21	·19	·17	·15	·13	·12	·10	·08	·06	·04	·02
25	·38	·36	·34	·32	·30	·28	·25	·23	·21	·19	·17	·16	·14	·12	·10	·08	·06	·04	·02
26	·38	·36	·34	·32	·30	·28	·26	·24	·22	·20	·18	·16	·14	·12	·10	·08	·06	·04	·02
27	·39	·36	·34	·32	·30	·28	·26	·24	·22	·20	·18	·16	·14	·12	·10	·08	·06	·04	·02
28	·39	·37	·35	·32	·30	·28	·26	·24	·22	·20	·18	·16	·14	·12	·10	·08	·06	·04	·02
29	·39	·37	·35	·33	·31	·29	·26	·24	·22	·20	·18	·16	·14	·12	·10	·08	·06	·04	·02
30	·40	·38	·35	·33	·31	·29	·27	·25	·22	·20	·18	·16	·14	·12	·10	·08	·06	·04	·02
31	·40	·38	·36	·33	·31	·29	·27	·25	·23	·21	·18	·16	·14	·12	·10	·08	·06	·04	·02
32	·41	·38	·36	·34	·32	·29	·27	·25	·23	·21	·19	·17	·14	·12	·10	·08	·06	·04	·02
33	·41	·39	·36	·34	·32	·30	·28	·25	·23	·21	·19	·17	·15	·13	·10	·08	·06	·04	·02
34	·42	·39	·37	·35	·32	·30	·28	·26	·23	·21	·19	·17	·15	·13	·11	·08	·06	·04	·02
35	·42	·40	·37	·35	·33	·30	·28	·26	·24	·22	·19	·17	·15	·13	·11	·09	·06	·04	·02
36	·43	·40	·38	·35	·33	·31	·29	·26	·24	·22	·20	·17	·15	·13	·11	·09	·06	·04	·02
37	·43	·41	·38	·36	·34	·31	·29	·27	·24	·22	·20	·18	·15	·13	·11	·09	·07	·04	·02
38	·44	·41	·39	·36	·34	·32	·29	·27	·25	·22	·20	·18	·16	·13	·11	·09	·07	·04	·02
39	·44	·42	·39	·37	·34	·32	·30	·27	·25	·23	·20	·18	·16	·14	·11	·09	·07	·04	·02
40	·45	·42	·40	·37	·35	·33	·30	·28	·25	·23	·21	·18	·16	·14	·11	·09	·07	·05	·02
41	·46	·43	·41	·38	·36	·33	·31	·28	·26	·23	·21	·19	·16	·14	·12	·09	·07	·05	·02
42	·46	·44	·41	·39	·36	·34	·31	·29	·26	·24	·21	·19	·17	·14	·12	·09	·07	·05	·02
43	·47	·44	·42	·39	·37	·34	·32	·29	·27	·24	·22	·19	·17	·14	·12	·10	·07	·05	·02
44	·48	·45	·43	·40	·37	·35	·32	·30	·27	·25	·22	·20	·17	·15	·12	·10	·07	·05	·02
45	·49	·46	·43	·41	·38	·35	·33	·30	·27	·25	·22	·20	·17	·15	·12	·10	·07	·05	·02
46	·50	·47	·44	·41	·39	·36	·33	·31	·28	·25	·23	·20	·18	·15	·13	·10	·08	·05	·03
47	·50	·48	·45	·42	·39	·37	·34	·31	·29	·26	·23	·21	·18	·15	·13	·10	·08	·05	·03
48	·51	·49	·46	·43	·40	·37	·35	·32	·29	·26	·24	·21	·18	·16	·13	·10	·08	·05	·03
49	·52	·50	·47	·44	·41	·38	·35	·32	·30	·27	·24	·21	·19	·16	·13	·11	·08	·05	·03
50	·54	·51	·48	·45	·42	·39	·36	·33	·30	·27	·25	·22	·19	·16	·14	·11	·08	·05	·03
51	·55	·52	·49	·46	·43	·40	·37	·34	·31	·28	·25	·22	·20	·17	·14	·11	·08	·06	·03
52	·56	·53	·50	·47	·44	·40	·38	·35	·32	·29	·26	·23	·20	·17	·14	·11	·09	·06	·03
53	·57	·54	·51	·48	·45	·41	·38	·35	·32	·29	·26	·23	·20	·17	·15	·12	·09	·06	·03
54	·59	·55	·52	·49	·46	·42	·39	·36	·33	·30	·27	·24	·21	·18	·15	·12	·09	·06	·03
55	·60	·57	·53	·50	·47	·43	·40	·37	·34	·31	·28	·24	·21	·18	·15	·12	·09	·06	·03
56	·62	·58	·55	·51	·48	·45	·41	·38	·35	·32	·28	·25	·22	·19	·16	·13	·09	·06	·03
57	·63	·60	·56	·53	·49	·46	·42	·39	·36	·32	·29	·26	·23	·19	·16	·13	·10	·06	·03
58	·65	·61	·58	·54	·51	·47	·44	·40	·37	·33	·30	·27	·23	·20	·17	·13	·10	·07	·03
59	·67	·63	·59	·56	·52	·48	·45	·41	·38	·34	·31	·27	·24	·20	·17	·14	·10	·07	·03
60	·69	·65	·61	·57	·54	·50	·46	·43	·39	·35	·32	·28	·25	·21	·18	·14	·10	·07	·03

ALTITUDE

OR

POSITION LINE

TABLES.

0° to 30° N. or S.

TRUE ALTITUDE OF BODY.

LATITUDE 0°.														
Westerly Hour Angle.	DECLINATION — North or South.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.
24 0	90	0.0	89	0.0	88	0.0	87	0.0	86	0.0	85	0.0	84	0 0
23 56	89	0.0	88	35.2	87	45.7	86	50.2	85	52.6	84	54.1	83	4 4
52	88	0.0	87	45.8	87	10.2	86	23.6	85	31.7	84	37.0	83	8 8
48	87	0.0	86	50.2	86	23.7	85	45.4	85	0.1	84	10.2	83	12 12
44	86	0.0	85	52.7	85	31.7	85	0.1	84	20.7	83	36.0	82	16 16
40	85	0.0	84	54.1	84	36.8	84	10.2	83	36.0	82	56.0	82	20 20
36	84	0.0	83	55.0	83	40.5	83	17.6	82	47.5	82	11.7	81	24 24
32	83	0.0	82	55.8	82	43.2	82	23.2	81	56.5	81	24.3	80	28 28
28	82	0.0	81	56.3	81	45.3	81	27.5	81	3.6	80	34.5	80	32 32
24	81	0.0	80	56.7	80	46.8	80	31.0	80	9.4	79	42.9	79	36 36
20	80	0.0	79	57.0	79	48.2	79	33.8	79	14.2	78	49.8	78	40 40
16	79	0.0	78	57.3	78	49.3	78	36.1	78	18.2	77	55.8	77	44 44
12	78	0.0	77	57.5	77	50.2	77	38.2	77	21.6	77	0.9	76	48 48
8	77	0.0	76	57.7	76	51.0	76	39.9	76	24.5	76	5.2	75	52 52
4	76	0.0	75	57.9	75	51.6	75	41.8	75	27.0	75	9.0	74	56 56
23 0	75	0.0	74	58.1	74	52.2	74	42.6	74	29.3	74	12.5	73	1 0
22 56	74	0.0	73	58.2	73	52.7	73	43.7	73	31.2	73	15.4	72	4 4
52	73	0.0	72	58.3	72	53.2	72	44.7	72	33.0	72	18.0	72	8 8
48	72	0.0	71	58.4	71	53.5	71	45.6	71	34.5	71	20.5	71	12 12
44	71	0.0	70	58.5	70	54.0	70	46.4	70	35.9	70	22.6	70	16 16
40	70	0.0	69	58.6	69	54.2	69	47.1	69	37.2	69	24.5	69	20 20
36	69	0.0	68	58.6	68	54.5	68	47.8	68	38.4	68	26.4	68	24 24
32	68	0.0	67	58.7	67	54.8	67	48.4	67	39.5	67	28.0	67	28 28
28	67	0.0	66	58.8	66	55.1	66	48.9	66	40.4	66	29.5	66	32 32
24	66	0.0	65	58.8	65	55.3	65	49.5	65	41.3	65	30.9	65	36 36
20	65	0.0	64	58.9	64	55.5	64	50.0	64	42.1	64	32.2	64	40 40
16	64	0.0	63	59.0	63	55.6	63	50.4	63	42.9	63	33.4	63	44 44
12	63	0.0	62	59.0	62	55.9	62	50.8	62	43.6	62	34.5	62	48 48
8	62	0.0	61	59.0	61	56.1	61	51.1	61	44.3	61	35.5	61	52 52
4	61	0.0	60	59.0	60	56.2	60	51.5	60	44.9	60	36.5	60	56 56
22 0	60	0.0	59	59.1	59	56.3	59	51.9	59	45.6	59	37.5	59	2 0
21 56	59	0.0	58	59.1	58	56.5	58	52.2	58	46.1	58	38.4	58	4 4
52	58	0.0	57	59.2	57	56.6	57	52.5	57	46.6	57	39.2	57	8 8
48	57	0.0	56	59.2	56	56.8	56	52.7	56	47.1	56	40.0	56	12 12
44	56	0.0	55	59.2	55	56.9	55	53.0	55	47.6	55	40.7	55	16 16
40	55	0.0	54	59.2	54	57.0	54	53.3	54	48.1	54	41.4	54	20 20
36	54	0.0	53	59.3	53	57.1	53	53.5	53	48.5	53	42.0	53	24 24
32	53	0.0	52	59.3	52	57.2	52	53.8	52	48.9	52	42.7	52	28 28
28	52	0.0	51	59.3	51	57.3	51	54.0	51	49.3	51	43.3	51	32 32
24	51	0.0	50	59.3	50	57.4	50	54.2	50	49.6	50	43.9	50	36 36
20	50	0.0	49	59.4	49	57.5	49	54.4	49	50.0	49	44.5	49	40 40
16	49	0.0	48	59.4	48	57.6	48	54.6	48	50.4	48	45.0	48	44 44
12	48	0.0	47	59.4	47	57.7	47	54.8	47	50.7	47	45.5	47	48 48
8	47	0.0	46	59.4	46	57.7	46	55.0	46	51.0	46	46.0	46	52 52
4	46	0.0	45	59.5	45	57.8	45	55.1	45	51.3	45	46.5	45	56 56
21 0	45	0.0	44	59.5	44	57.9	44	55.3	44	51.6	44	47.0	44	3 0

LATITUDE 0°.															
Westerly Hour Angle.		DECLINATION — <i>North or South.</i>												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	77	0.0	76	0.0	75	0.0	74	0.0	73	0.0	72	0.0	71	0.0
23	56	76	57.7	75	57.9	74	58.1	73	58.2	72	58.3	71	58.4	70	58.5
	52	76	51.0	75	51.6	74	52.2	73	52.7	72	53.1	71	53.6	70	53.9
	48	76	39.8	75	41.3	74	42.6	73	43.7	72	44.7	71	45.6	70	46.4
	44	76	24.5	75	27.0	74	29.3	73	31.2	72	33.0	71	34.5	70	36.0
	40	76	5.2	75	9.0	74	12.5	73	15.4	72	18.0	71	20.4	70	22.6
	36	75	42.2	74	47.5	73	52.2	72	56.4	71	60.1	70	63.5	69	66.5
	32	75	15.8	74	22.7	73	28.9	72	34.4	71	39.3	70	43.7	69	47.8
	28	74	46.3	73	54.9	72	62.7	71	70.5	70	78.2	69	85.8	68	93.2
	24	74	14.0	73	24.3	72	33.6	71	42.0	70	49.6	69	56.5	68	62.9
	20	73	39.1	72	51.2	71	62.7	70	73.1	69	82.4	68	90.5	67	98.2
	16	73	2.0	72	15.8	71	28.5	70	39.9	69	50.4	68	59.8	67	67.9
	12	72	22.7	71	38.4	70	52.6	69	65.7	68	77.2	67	87.1	66	95.4
	8	71	41.7	70	59.1	69	74.0	68	86.1	67	95.8	66	105.1	65	112.9
	4	70	59.0	69	75.5	68	89.6	67	101.1	66	110.1	65	118.6	64	125.5
23	0	70	15.0	69	35.5	68	54.6	67	72.1	66	89.1	65	104.0	64	117.8
22	56	69	29.5	68	51.7	67	70.1	66	84.6	65	97.1	64	107.6	63	117.1
	52	68	43.0	67	66.7	66	82.8	65	96.2	64	107.6	63	117.1	62	125.5
	48	67	55.4	67	74.0	66	89.6	65	103.1	64	114.6	63	123.1	62	131.6
	44	67	6.9	66	33.2	65	58.0	64	82.1	63	105.6	62	127.1	61	144.6
	40	66	17.5	65	45.1	64	69.6	63	93.1	62	115.6	61	137.1	60	154.6
	36	65	27.5	64	56.3	63	80.6	62	103.1	61	125.6	60	147.1	59	164.6
	32	64	36.7	63	66.3	62	88.6	61	110.1	60	132.6	59	151.1	58	171.6
	28	63	45.3	62	75.3	61	97.3	60	121.1	59	141.6	58	161.1	57	181.6
	24	62	53.4	61	82.6	60	104.6	59	130.1	58	150.6	57	169.1	56	189.6
	20	62	1.0	61	34.1	60	57.6	59	81.1	58	105.1	57	129.1	56	153.6
	16	61	8.1	60	42.2	59	66.3	58	90.6	57	115.1	56	140.1	55	169.6
	12	60	14.8	59	49.9	58	74.6	57	99.1	56	124.1	55	149.1	54	179.6
	8	59	21.2	58	57.0	57	82.1	56	107.1	55	132.1	54	157.1	53	189.6
	4	58	27.1	57	62.9	56	88.6	55	113.1	54	138.1	53	163.1	52	199.6
22	0	57	32.8	56	70.3	55	102.6	54	130.1	53	157.6	52	185.1	51	217.6
21	56	56	38.2	55	76.5	54	108.6	53	137.1	52	165.1	51	194.1	50	224.6
	52	55	43.3	54	82.6	53	114.6	52	144.1	51	172.1	50	202.1	49	231.6
	48	54	48.2	53	87.5	52	119.6	51	150.1	50	179.1	49	208.1	48	239.6
	44	53	52.9	52	91.6	51	123.6	50	155.1	49	184.1	48	213.1	47	244.6
	40	52	57.3	51	95.2	50	127.6	49	159.1	48	188.1	47	217.1	46	250.6
	36	52	1.5	51	43.2	50	67.6	49	93.1	48	120.1	47	147.1	46	174.6
	32	51	5.6	50	47.7	49	72.6	48	102.1	47	128.1	46	156.1	45	184.6
	28	50	9.5	49	52.3	48	77.6	47	107.1	46	133.1	45	161.1	44	190.6
	24	49	13.2	48	56.6	47	81.6	46	111.1	45	137.1	44	165.1	43	197.6
	20	48	16.8	47	60.4	46	85.6	45	115.1	44	141.1	43	169.1	42	203.6
	16	47	20.3	46	64.4	45	89.6	44	119.1	43	145.1	42	173.1	41	209.6
	12	46	23.6	45	68.5	44	93.6	43	123.1	42	149.1	41	177.1	40	215.6
	8	45	26.9	44	72.4	43	97.6	42	127.1	41	153.1	40	181.1	39	221.6
	4	44	30.0	43	76.4	42	101.6	41	131.1	40	157.1	39	185.1	38	227.6
21	0	43	33.0	42	79.4	41	104.6	40	134.1	39	160.1	38	189.1	37	233.6

TRUE ALTITUDE OF BODY.

LATITUDE 0°.															
Westerly Hour Angle.		DECLINATION — <i>North or South.</i>												Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
21 0	45 0 0	44 59 5	44 57 9	44 55 3	44 51 6	44 47 0	44 41 2	44 34 5	44 26 7	44 17 9	44 8 2	43 57 4	43 45 7	3 0	
20 56	44 0 0	43 59 5	43 58 0	43 55 5	43 51 9	43 47 4	43 41 9	43 35 4	43 27 9	43 19 4	43 9 9	42 59 5	42 48 1	4 4	
52	43 0 0	42 59 5	42 58 0	42 55 6	42 52 2	42 47 8	42 42 5	42 36 2	42 28 9	42 20 7	42 11 6	42 1 6	41 50 6	8	
48	42 0 0	41 59 5	41 58 1	41 55 8	41 52 5	41 48 2	41 43 1	41 37 0	41 30 0	41 22 1	41 13 3	41 3 5	40 52 9	12	
44	41 0 0	40 59 5	40 58 1	40 55 9	40 52 7	40 48 6	40 43 6	40 37 8	40 31 0	40 23 4	40 14 9	40 5 5	39 55 2	16	
40	40 0 0	39 59 6	39 58 2	39 56 0	39 53 0	39 49 0	39 44 2	39 38 6	39 32 0	39 24 6	39 16 4	39 7 4	38 57 4	20	
36	39 0 0	38 59 6	38 58 3	38 56 2	38 53 2	38 49 4	38 44 8	38 39 3	38 33 0	38 25 9	38 17 9	38 9 1	37 59 6	24	
32	38 0 0	37 59 6	37 58 3	37 56 3	37 53 5	37 49 8	37 45 4	37 40 0	37 34 0	37 27 1	37 19 4	37 10 9	37 1 7	28	
28	37 0 0	36 59 6	36 58 4	36 56 4	36 53 7	36 50 1	36 45 9	36 40 7	36 34 9	36 28 2	36 20 8	36 12 6	36 3 7	32	
24	36 0 0	35 59 6	35 58 4	35 56 6	35 53 9	35 50 5	35 46 4	35 41 4	35 35 8	35 29 3	35 22 2	35 14 3	35 5 7	36	
20	35 0 0	34 59 6	34 58 5	34 56 7	34 54 1	34 50 9	34 46 9	34 42 1	34 36 6	34 30 4	34 23 5	34 16 0	34 7 7	40	
16	34 0 0	33 59 7	33 58 6	33 56 8	33 54 3	33 51 2	33 47 3	33 42 7	33 37 5	33 31 5	33 24 9	33 17 6	33 9 6	44	
12	33 0 0	32 59 7	32 58 7	32 57 0	32 54 6	32 51 5	32 47 8	32 43 4	32 38 4	32 32 6	32 26 2	32 19 1	32 11 4	48	
8	32 0 0	31 59 7	31 58 7	31 57 1	31 54 7	31 51 8	31 48 2	31 44 0	31 39 1	31 33 6	31 27 5	31 20 6	31 13 3	52	
4	31 0 0	30 59 7	30 58 7	30 57 2	30 54 9	30 52 1	30 48 7	30 44 6	30 39 9	30 34 6	30 28 7	30 22 1	30 15 1	3 56	
20 0	30 0 0	29 59 7	29 58 8	29 57 3	29 55 1	29 52 4	29 49 1	29 45 2	29 40 7	29 35 6	29 29 9	29 23 7	29 16 8	4 0	
19 56	29 0 0	28 59 7	28 58 8	28 57 4	28 55 4	28 52 7	28 49 6	28 45 9	28 41 5	28 36 6	28 31 1	28 25 1	28 18 5	4	
52	28 0 0	27 59 7	27 58 8	27 57 5	27 55 6	27 53 0	27 50 0	27 46 4	27 42 2	27 37 5	27 32 3	27 26 5	27 20 1	8	
48	27 0 0	26 59 7	26 58 9	26 57 6	26 55 7	26 53 4	26 50 4	26 47 0	26 43 0	26 38 5	26 33 4	26 27 9	26 21 9	12	
44	26 0 0	25 59 7	25 58 9	25 57 7	25 55 9	25 53 6	25 50 9	25 47 5	25 43 6	25 39 4	25 34 6	25 29 3	25 23 4	16	
40	25 0 0	24 59 8	24 59 0	24 57 8	24 56 1	24 53 9	24 51 2	24 48 0	24 44 4	24 40 3	24 35 7	24 30 6	24 25 1	20	
36	24 0 0	23 59 8	23 59 0	23 57 9	23 56 3	23 54 2	23 51 6	23 48 5	23 45 1	23 41 2	23 36 8	23 31 9	23 26 6	24	
32	23 0 0	22 59 8	22 59 1	22 58 0	22 56 4	22 54 5	22 52 0	22 49 1	22 45 8	22 42 1	22 37 9	22 33 2	22 28 1	28	
28	22 0 0	21 59 8	21 59 1	21 58 1	21 56 6	21 54 7	21 52 4	21 49 7	21 46 5	21 42 9	21 38 9	21 34 5	21 29 7	32	
24	21 0 0	20 59 8	20 59 2	20 58 2	20 56 8	20 55 0	20 52 8	20 50 2	20 47 2	20 43 8	20 40 0	20 35 8	20 31 2	36	
20	20 0 0	19 59 8	19 59 2	19 58 3	19 56 9	19 55 2	19 53 1	19 50 7	19 47 9	19 44 6	19 41 0	19 37 1	19 32 7	40	
16	19 0 0	18 59 8	18 59 2	18 58 4	18 57 1	18 55 5	18 53 5	18 51 2	18 48 5	18 45 5	18 42 0	18 38 3	18 34 2	44	
12	18 0 0	17 59 8	17 59 3	17 58 5	17 57 3	17 55 7	17 53 9	17 51 7	17 49 1	17 46 3	17 43 0	17 39 5	17 35 6	48	
8	17 0 0	16 59 8	16 59 3	16 58 6	16 57 4	16 56 0	16 54 2	16 52 2	16 49 8	16 47 1	16 44 0	16 40 7	16 37 1	52	
4	16 0 0	15 59 8	15 59 3	15 58 6	15 57 6	15 56 2	15 54 6	15 52 6	15 50 4	15 47 9	15 45 0	15 41 9	15 38 5	4 56	
19 0	15 0 0	14 59 9	14 59 4	14 58 7	14 57 8	14 56 5	14 54 9	14 53 1	14 51 0	14 48 6	14 46 0	14 43 1	14 39 9	5 0	
18 56	14 0 0	13 59 9	13 59 4	13 58 8	13 57 9	13 56 7	13 55 3	13 53 6	13 51 6	13 49 4	13 47 0	13 44 3	13 41 3	4	
52	13 0 0	12 59 9	12 59 4	12 58 9	12 58 1	12 57 0	12 55 6	12 54 1	12 52 3	12 50 2	12 48 0	12 45 4	12 42 7	8	
48	12 0 0	11 59 9	11 59 5	11 59 0	11 58 2	11 57 2	11 56 0	11 54 6	11 52 9	11 51 0	11 48 9	11 46 6	11 44 0	12	
44	11 0 0	10 59 9	10 59 5	10 59 1	10 58 4	10 57 4	10 56 4	10 55 0	10 53 5	10 51 8	10 49 9	10 47 7	10 45 4	16	
40	10 0 0	9 59 9	9 59 6	9 59 2	9 58 5	9 57 7	9 56 7	9 55 5	9 54 1	9 52 5	9 50 8	9 48 9	9 46 8	20	
36	9 0 0	8 59 9	8 59 6	8 59 3	8 58 6	8 57 9	8 57 0	8 56 0	8 54 7	8 53 3	8 51 7	8 50 0	8 48 1	24	
32	8 0 0	8 0 0	7 59 6	7 59 4	7 58 8	7 58 1	7 57 4	7 56 5	7 55 3	7 54 1	7 52 6	7 51 1	7 49 5	28	
28	7 0 0	7 0 0	6 59 7	6 59 4	6 59 0	6 58 4	6 57 7	6 56 9	6 55 9	6 54 8	6 53 6	6 52 2	6 50 8	32	
24	6 0 0	6 0 0	5 59 7	5 59 5	5 59 1	5 58 6	5 58 0	5 57 4	5 56 5	5 55 6	5 54 5	5 53 3	5 52 1	36	
20	5 0 0	5 0 0	4 59 8	4 59 6	4 59 3	4 58 9	4 58 4	4 57 8	4 57 0	4 56 3	4 55 5	4 54 5	4 53 4	40	
16	4 0 0	4 0 0	3 59 8	3 59 7	3 59 4	3 59 1	3 58 6	3 58 2	3 57 7	3 57 0	3 56 4	3 55 6	3 54 8	44	
12	3 0 0	3 0 0	2 59 9	2 59 8	2 59 6	2 59 3	2 59 0	2 58 7	2 58 2	2 57 8	2 57 3	2 56 7	2 56 1	48	
8	2 0 0	2 0 0	1 59 9	1 59 9	1 59 7	1 59 6	1 59 4	1 59 1	1 58 8	1 58 5	1 58 1	1 57 8	1 57 4	52	
4	1 0 0	1 0 0	1 0 0	1 0 0	0 59 8	0 59 8	0 59 7	0 59 5	0 59 4	0 59 3	0 59 1	0 58 9	0 58 7	5 56	
18 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	6 0	

		LATITUDE 0°.													
Westerly Hour Angle.		DECLINATION — North or South.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	43 33.0	43 19.4	43 4.8	42 49.3	42 32.9	42 15.6	41 57.5	41 38.5	41 18.6	40 58.0	40 36.5	40 14.4	3	0
20	56	42 35.9	42 22.7	42 8.6	41 53.7	41 37.7	41 21.0	41 3.4	40 45.0	40 25.8	40 5.8	39 45.0	39 23.4		4
	52	41 38.7	41 26.0	41 12.4	40 57.8	40 42.5	40 26.2	40 9.2	39 51.4	39 32.8	39 13.4	38 53.2	38 32.3		8
	48	40 41.5	40 29.1	40 15.9	40 1.9	39 47.0	39 31.4	39 14.9	38 57.6	38 39.6	38 20.8	38 1.2	37 40.9		12
	44	39 44.1	39 32.2	39 19.4	39 5.9	38 51.5	38 36.3	38 20.4	38 3.6	37 46.2	37 27.9	37 9.0	36 49.4		16
	40	38 46.7	38 35.2	38 22.8	38 9.7	37 55.8	37 41.1	37 25.7	37 9.5	36 52.6	36 34.9	36 16.6	35 57.6		20
	36	37 49.2	37 38.1	37 26.2	37 13.5	37 0.0	36 45.8	36 30.9	36 15.2	35 58.9	35 41.8	35 24.1	35 5.6		24
	32	36 51.7	36 41.0	36 29.4	36 17.1	36 4.1	35 50.4	35 36.0	35 20.9	35 5.0	34 48.5	34 31.3	34 13.5		28
	28	35 54.1	35 43.7	35 32.6	35 20.7	35 8.1	34 54.9	34 41.0	34 26.3	34 11.0	33 55.0	33 38.5	33 21.1		32
	24	34 56.4	34 46.4	34 35.6	34 24.2	34 12.1	33 59.3	33 45.8	33 31.6	33 16.9	33 1.4	32 45.4	32 28.6		36
	20	33 58.7	33 49.0	33 38.6	33 27.6	33 15.9	33 3.5	32 50.5	32 36.9	32 22.6	32 7.6	31 52.1	31 36.0		40
	16	33 0.9	32 51.6	32 41.6	32 31.0	32 19.6	32 7.7	31 55.2	31 42.0	31 28.2	31 13.8	30 58.8	30 43.2		44
	12	32 1.1	31 54.1	31 44.5	31 34.2	31 23.3	31 11.9	30 59.7	30 47.0	30 33.7	30 19.8	30 5.4	29 50.3		48
	8	31 5.2	30 56.6	30 47.3	30 37.4	30 26.9	30 15.9	30 4.2	29 51.9	29 39.1	29 25.7	29 11.7	28 57.2		52
	4	30 7.3	29 59.0	29 50.1	29 40.5	29 30.4	29 19.8	29 8.5	28 56.7	28 44.4	28 31.5	28 18.0	28 4.1	3	56
20	0	29 9.4	29 1.3	28 52.7	28 43.6	28 33.9	28 23.6	28 12.8	28 1.5	27 49.6	27 37.1	27 24.2	27 10.7	4	0
19	56	28 11.4	28 3.6	27 55.4	27 46.6	27 37.3	27 27.4	27 17.0	27 6.1	26 54.6	26 42.7	26 30.3	26 17.4		4
	52	27 13.3	27 5.9	26 58.0	26 49.6	26 40.6	26 31.1	26 21.1	26 10.7	25 59.7	25 48.2	25 36.2	25 23.8		8
	48	26 15.3	26 8.2	26 0.6	25 52.5	25 43.9	25 34.8	25 25.2	25 15.1	25 4.6	24 53.6	24 42.1	24 30.2		12
	44	25 17.2	25 10.4	25 3.1	24 55.4	24 47.1	24 38.4	24 29.2	24 19.6	24 9.5	23 58.9	23 47.9	23 36.5		16
	40	24 19.0	24 12.5	24 5.6	23 58.2	23 50.3	23 41.9	23 33.1	23 23.9	23 14.3	23 4.1	22 53.6	22 42.6		20
	36	23 20.9	23 14.6	23 8.0	23 0.9	22 53.4	22 45.4	22 37.1	22 28.2	22 19.0	22 9.3	21 59.2	21 48.8		24
	32	22 22.7	22 16.8	22 10.4	22 3.6	21 56.5	21 48.9	21 40.9	21 32.5	21 23.6	21 14.4	21 4.8	20 54.8		28
	28	21 24.5	21 18.9	21 12.8	21 6.4	20 59.5	20 52.3	20 44.6	20 36.6	20 28.2	20 19.4	20 10.3	20 0.7		32
	24	20 26.2	20 20.9	20 15.2	20 9.0	20 2.5	19 55.6	19 48.4	19 40.8	19 32.8	19 24.4	19 15.7	19 6.6		36
	20	19 28.0	19 22.9	19 17.4	19 11.7	19 5.5	18 59.0	18 52.1	18 44.8	18 37.2	18 29.3	18 21.0	18 12.4		40
	16	18 29.7	18 24.9	18 19.7	18 14.2	18 8.4	18 2.2	17 55.7	17 48.9	17 41.7	17 34.1	17 26.3	17 18.1		44
	12	17 31.4	17 26.9	17 22.0	17 16.8	17 11.3	17 5.5	16 59.3	16 52.9	16 46.0	16 39.0	16 31.6	16 23.9		48
	8	16 33.1	16 28.8	16 24.2	16 19.4	16 14.2	16 8.7	16 3.0	15 56.8	15 50.4	15 43.7	15 36.7	15 29.5		52
	4	15 34.8	15 30.8	15 26.4	15 21.9	15 17.0	15 11.9	15 6.4	15 0.7	14 54.7	14 48.5	14 41.9	14 35.1	4	56
19	0	14 36.4	14 32.6	14 28.7	14 24.4	14 19.7	14 15.0	14 9.9	14 4.6	13 59.0	13 53.1	13 47.0	13 40.6	5	0
18	56	13 38.0	13 34.6	13 30.9	13 26.9	13 22.6	13 18.1	13 13.4	13 8.4	13 3.2	12 57.7	12 52.0	12 46.1		4
	52	12 39.7	12 36.5	12 33.0	12 29.3	12 25.4	12 21.2	12 16.8	12 12.2	12 7.4	12 2.3	11 57.0	11 51.5		8
	48	11 41.3	11 38.4	11 35.1	11 31.7	11 28.1	11 24.3	11 20.2	11 16.0	11 11.5	11 6.9	11 2.0	10 57.0		12
	44	10 42.9	10 40.2	10 37.2	10 34.1	10 30.8	10 27.4	10 23.6	10 19.7	10 15.7	10 11.4	10 7.0	10 2.4		16
	40	9 44.5	9 42.0	9 39.4	9 36.5	9 33.5	9 30.4	9 27.0	9 23.5	9 19.8	9 15.9	9 11.9	9 7.7		20
	36	8 46.1	8 43.8	8 41.5	8 38.9	8 36.2	8 33.4	8 30.4	8 27.1	8 23.9	8 20.4	8 16.8	8 13.0		24
	32	7 47.6	7 45.6	7 43.6	7 41.3	7 38.9	7 36.4	7 33.7	7 30.9	7 27.9	7 24.9	7 21.6	7 18.3		28
	28	6 49.2	6 47.5	6 45.6	6 43.6	6 41.5	6 39.4	6 37.0	6 34.6	6 32.0	6 29.3	6 26.4	6 23.5		32
	24	5 50.7	5 49.3	5 47.7	5 46.0	5 44.2	5 42.4	5 40.3	5 38.2	5 36.0	5 33.7	5 31.3	5 28.8		36
	20	4 52.3	4 51.1	4 49.8	4 48.4	4 46.9	4 45.3	4 43.6	4 41.9	4 40.0	4 38.1	4 36.1	4 34.0		40
	16	3 53.9	3 52.9	3 51.8	3 50.7	3 49.5	3 48.2	3 46.9	3 45.5	3 44.0	3 42.6	3 40.9	3 39.2		44
	12	2 55.4	2 54.7	2 53.9	2 53.0	2 52.1	2 51.2	2 50.2	2 49.1	2 48.0	2 46.9	2 45.7	2 44.4		48
	8	1 57.0	1 56.4	1 55.9	1 55.4	1 54.8	1 54.1	1 53.5	1 52.8	1 52.0	1 51.3	1 50.5	1 49.6		52
	4	0 58.5	0 58.2	0 58.0	0 57.6	0 57.4	0 57.1	0 56.7	0 56.4	0 56.0	0 55.6	0 55.2	0 54.9	5	56
18	0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	6	0

TRUE ALTITUDE OF BODY.

LATITUDE 1°.														
Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	89 0 0	90 0 0	89 0 0	88 0 0	87 0 0	86 0 0	85 0 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	0 0
23 56	88 35 2	89 0 0	88 35 2	87 45 8	86 50 2	85 52 6	84 54 1	83 55 1	82 55 7	81 56 3	80 56 7	79 57 0	78 57 4	4
52	87 45 8	88 35 2	87 45 8	86 50 2	85 52 6	84 54 1	83 55 1	82 55 7	81 56 3	80 56 7	79 57 0	78 57 4	77 57 8	8
48	86 50 2	87 45 8	86 50 2	85 52 6	84 54 1	83 55 1	82 55 7	81 56 3	80 56 7	79 57 0	78 57 4	77 57 8	76 58 2	12
44	85 52 6	86 50 2	85 52 6	84 54 1	83 55 1	82 55 7	81 56 3	80 56 7	79 57 0	78 57 4	77 57 8	76 58 2	75 58 6	16
40	84 54 1	85 52 6	84 54 1	83 55 1	82 55 7	81 56 3	80 56 7	79 57 0	78 57 4	77 57 8	76 58 2	75 58 6	74 59 0	20
36	83 55 0	84 54 1	83 55 0	82 55 7	81 56 3	80 56 7	79 57 0	78 57 4	77 57 8	76 58 2	75 58 6	74 59 0	73 59 4	24
32	82 55 8	83 55 0	82 55 8	81 56 3	80 56 7	79 57 0	78 57 4	77 57 8	76 58 2	75 58 6	74 59 0	73 59 4	72 59 8	28
28	81 56 3	82 55 8	81 56 3	80 56 7	79 57 0	78 57 4	77 57 8	76 58 2	75 58 6	74 59 0	73 59 4	72 59 8	71 60 2	32
24	80 56 7	81 56 3	80 56 7	79 57 0	78 57 4	77 57 8	76 58 2	75 58 6	74 59 0	73 59 4	72 59 8	71 60 2	70 60 6	36
20	79 57 0	80 56 7	79 57 0	78 57 4	77 57 8	76 58 2	75 58 6	74 59 0	73 59 4	72 59 8	71 60 2	70 60 6	69 61 0	40
16	78 57 3	79 57 0	78 57 3	77 57 8	76 58 2	75 58 6	74 59 0	73 59 4	72 59 8	71 60 2	70 60 6	69 61 0	68 61 4	44
12	77 57 5	78 57 3	77 57 5	76 58 2	75 58 6	74 59 0	73 59 4	72 59 8	71 60 2	70 60 6	69 61 0	68 61 4	67 61 8	48
8	76 57 7	77 57 5	76 57 7	75 58 6	74 59 0	73 59 4	72 59 8	71 60 2	70 60 6	69 61 0	68 61 4	67 61 8	66 62 2	52
4	75 57 9	76 57 7	75 57 9	74 59 0	73 59 4	72 59 8	71 60 2	70 60 6	69 61 0	68 61 4	67 61 8	66 62 2	65 62 6	56
23 0	74 58 1	75 57 9	74 58 1	73 59 4	72 59 8	71 60 2	70 60 6	69 61 0	68 61 4	67 61 8	66 62 2	65 62 6	64 63 0	1 0
22 56	73 58 2	74 58 1	73 58 2	72 59 8	71 60 2	70 60 6	69 61 0	68 61 4	67 61 8	66 62 2	65 62 6	64 63 0	63 63 4	4
52	72 58 3	73 58 2	72 58 3	71 60 2	70 60 6	69 61 0	68 61 4	67 61 8	66 62 2	65 62 6	64 63 0	63 63 4	62 63 8	8
48	71 58 4	72 58 3	71 58 4	70 60 6	69 61 0	68 61 4	67 61 8	66 62 2	65 62 6	64 63 0	63 63 4	62 63 8	61 64 2	12
44	70 58 5	71 58 4	70 58 5	69 61 0	68 61 4	67 61 8	66 62 2	65 62 6	64 63 0	63 63 4	62 63 8	61 64 2	60 64 6	16
40	69 58 6	70 58 5	69 58 6	68 61 4	67 61 8	66 62 2	65 62 6	64 63 0	63 63 4	62 63 8	61 64 2	60 64 6	59 65 0	20
36	68 58 6	69 58 6	68 58 6	67 61 8	66 62 2	65 62 6	64 63 0	63 63 4	62 63 8	61 64 2	60 64 6	59 65 0	58 65 4	24
32	67 58 7	68 58 6	67 58 7	66 62 2	65 62 6	64 63 0	63 63 4	62 63 8	61 64 2	60 64 6	59 65 0	58 65 4	57 65 8	28
28	66 58 8	67 58 7	66 58 8	65 62 6	64 63 0	63 63 4	62 63 8	61 64 2	60 64 6	59 65 0	58 65 4	57 65 8	56 66 2	32
24	65 58 8	66 58 8	65 58 8	64 63 0	63 63 4	62 63 8	61 64 2	60 64 6	59 65 0	58 65 4	57 65 8	56 66 2	55 66 6	36
20	64 58 9	65 58 8	64 58 9	63 63 4	62 63 8	61 64 2	60 64 6	59 65 0	58 65 4	57 65 8	56 66 2	55 66 6	54 67 0	40
16	63 59 0	64 58 9	63 59 0	62 63 8	61 64 2	60 64 6	59 65 0	58 65 4	57 65 8	56 66 2	55 66 6	54 67 0	53 67 4	44
12	62 59 0	63 59 0	62 59 0	61 64 2	60 64 6	59 65 0	58 65 4	57 65 8	56 66 2	55 66 6	54 67 0	53 67 4	52 67 8	48
8	61 59 0	62 59 0	61 59 0	60 64 6	59 65 0	58 65 4	57 65 8	56 66 2	55 66 6	54 67 0	53 67 4	52 67 8	51 68 2	52
4	60 59 0	61 59 0	60 59 0	59 65 0	58 65 4	57 65 8	56 66 2	55 66 6	54 67 0	53 67 4	52 67 8	51 68 2	50 68 6	56
22 0	59 59 1	60 59 0	59 59 1	58 65 4	57 65 8	56 66 2	55 66 6	54 67 0	53 67 4	52 67 8	51 68 2	50 68 6	49 69 0	2 0
21 56	58 59 1	59 59 1	58 59 1	57 65 8	56 66 2	55 66 6	54 67 0	53 67 4	52 67 8	51 68 2	50 68 6	49 69 0	48 69 4	4
52	57 59 2	58 59 1	57 59 2	56 66 2	55 66 6	54 67 0	53 67 4	52 67 8	51 68 2	50 68 6	49 69 0	48 69 4	47 69 8	8
48	56 59 2	57 59 2	56 59 2	55 66 6	54 67 0	53 67 4	52 67 8	51 68 2	50 68 6	49 69 0	48 69 4	47 69 8	46 70 2	12
44	55 59 2	56 59 2	55 59 2	54 67 0	53 67 4	52 67 8	51 68 2	50 68 6	49 69 0	48 69 4	47 69 8	46 70 2	45 70 6	16
40	54 59 2	55 59 2	54 59 2	53 67 4	52 67 8	51 68 2	50 68 6	49 69 0	48 69 4	47 69 8	46 70 2	45 70 6	44 71 0	20
36	53 59 3	54 59 2	53 59 3	52 67 8	51 68 2	50 68 6	49 69 0	48 69 4	47 69 8	46 70 2	45 70 6	44 71 0	43 71 4	24
32	52 59 3	53 59 3	52 59 3	51 68 2	50 68 6	49 69 0	48 69 4	47 69 8	46 70 2	45 70 6	44 71 0	43 71 4	42 71 8	28
28	51 59 3	52 59 3	51 59 3	50 68 6	49 69 0	48 69 4	47 69 8	46 70 2	45 70 6	44 71 0	43 71 4	42 71 8	41 72 2	32
24	50 59 3	51 59 3	50 59 3	49 69 0	48 69 4	47 69 8	46 70 2	45 70 6	44 71 0	43 71 4	42 71 8	41 72 2	40 72 6	36
20	49 59 4	50 59 3	49 59 4	48 69 4	47 69 8	46 70 2	45 70 6	44 71 0	43 71 4	42 71 8	41 72 2	40 72 6	39 73 0	40
16	48 59 4	49 59 4	48 59 4	47 69 8	46 70 2	45 70 6	44 71 0	43 71 4	42 71 8	41 72 2	40 72 6	39 73 0	38 73 4	44
12	47 59 4	48 59 4	47 59 4	46 70 2	45 70 6	44 71 0	43 71 4	42 71 8	41 72 2	40 72 6	39 73 0	38 73 4	37 73 8	48
8	46 59 4	47 59 4	46 59 4	45 70 6	44 71 0	43 71 4	42 71 8	41 72 2	40 72 6	39 73 0	38 73 4	37 73 8	36 74 2	52
4	45 59 5	46 59 4	45 59 5	44 71 0	43 71 4	42 71 8	41 72 2	40 72 6	39 73 0	38 73 4	37 73 8	36 74 2	35 74 6	56
21 0	44 59 5	45 59 5	44 59 5	43 71 4	42 71 8	41 72 2	40 72 6	39 73 0	38 73 4	37 73 8	36 74 2	35 74 6	34 75 0	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 1°.																			
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.					
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°			
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	44	59.5	45	0.5	45	0.4	44	59.2	44	57.0	44	53.8	44	49.5	44	44.2	44	37.9
20	56	43	59.5	44	0.4	44	0.4	43	59.3	43	57.2	43	54.2	43	50.0	43	44.9	43	38.9
	52	42	59.5	43	0.4	43	0.4	42	59.4	42	57.4	42	54.5	42	50.5	42	45.6	42	39.8
	48	41	59.5	42	0.4	42	0.5	41	59.5	41	57.6	41	54.9	41	51.0	41	46.3	41	40.7
	44	40	59.5	41	0.4	41	0.5	40	59.6	40	57.8	40	55.1	40	51.5	40	47.0	40	41.6
	40	39	59.6	40	0.5	40	0.5	39	59.7	39	57.9	39	55.4	39	51.9	39	47.6	39	42.5
	36	38	59.6	39	0.5	39	0.6	38	59.7	38	58.1	38	55.7	38	52.4	38	48.3	38	43.3
	32	37	59.6	38	0.5	38	0.6	37	59.9	37	58.3	37	56.0	37	52.8	37	48.8	37	44.1
	28	36	59.6	37	0.5	37	0.7	36	59.9	36	58.5	36	56.3	36	53.2	36	49.5	36	44.9
	24	35	59.6	36	0.5	36	0.7	35	59.8	35	58.7	35	56.6	35	53.6	35	50.0	35	45.7
	20	34	59.6	35	0.5	35	0.8	34	59.9	34	58.9	34	56.8	34	54.1	34	50.6	34	46.4
	16	33	59.7	34	0.6	34	0.8	33	59.0	33	57.2	33	54.4	33	51.2	33	47.1	33	42.4
	12	32	59.7	33	0.6	33	0.8	32	59.2	32	57.4	32	54.9	32	51.7	32	47.9	32	43.4
	8	31	59.7	32	0.6	32	0.8	31	59.3	31	57.7	31	55.2	31	52.3	31	48.6	31	44.3
	4	30	59.7	31	0.6	31	0.9	30	59.5	30	57.9	30	55.7	30	52.8	30	49.3	30	45.2
20	0	29	59.7	30	0.6	30	0.9	29	59.7	29	58.2	29	56.0	29	53.3	29	50.0	29	46.2
19	56	28	59.7	29	0.6	29	0.9	28	59.8	28	58.4	28	56.4	28	53.8	28	50.8	28	47.0
	52	27	59.7	28	0.6	28	1.0	27	59.8	27	58.0	27	55.7	27	52.7	27	49.7	27	45.7
	48	26	59.7	27	0.6	27	1.0	26	59.7	26	58.2	26	56.7	26	54.4	26	51.4	26	47.9
	44	25	59.7	26	0.6	26	1.0	25	59.8	25	58.9	25	57.1	25	54.8	25	52.1	25	48.7
	40	24	59.8	25	0.6	25	1.1	24	59.8	24	58.9	24	57.8	24	55.8	24	53.4	24	50.3
	36	23	59.8	24	0.6	24	1.1	23	59.8	23	59.0	23	58.2	23	56.3	23	54.0	23	51.2
	32	22	59.8	23	0.6	23	1.2	22	59.8	22	59.2	22	58.5	22	56.8	22	54.7	22	52.0
	28	21	59.8	22	0.7	22	1.2	21	59.8	21	59.3	21	58.9	21	57.3	21	55.3	21	52.8
	24	20	59.8	21	0.7	21	1.2	20	59.8	20	59.2	20	58.9	20	57.8	20	55.9	20	53.6
	20	19	59.8	20	0.7	20	1.2	19	59.8	19	59.6	19	58.3	19	56.5	19	54.4	19	51.9
	16	18	59.8	19	0.7	19	1.3	18	59.8	18	59.9	18	58.7	18	57.1	18	55.2	18	52.8
	12	17	59.8	18	0.7	18	1.3	17	59.8	17	59.8	17	59.1	17	57.7	17	55.9	17	53.8
	8	16	59.8	17	0.7	17	1.4	16	59.8	16	59.9	16	59.9	16	59.6	16	58.3	16	56.7
	4	15	59.8	16	0.8	16	1.4	15	59.8	15	59.9	15	59.9	15	59.6	15	58.9	15	57.4
19	0	14	59.9	15	0.8	15	1.5	14	59.9	14	59.9	14	59.9	14	59.5	14	58.2	14	56.6
18	56	13	59.9	14	0.8	14	1.5	13	59.9	13	59.9	13	59.9	13	59.9	13	59.0	13	57.5
	52	12	59.9	13	0.8	13	1.5	12	59.9	12	59.9	12	59.9	12	59.9	12	59.0	12	57.5
	48	11	59.9	12	0.8	12	1.6	11	59.9	11	59.9	11	59.9	11	59.9	11	59.0	11	57.5
	44	10	59.9	11	0.9	11	1.6	10	59.9	10	59.9	10	59.9	10	59.9	10	59.0	10	57.5
	40	9	59.9	10	0.9	10	1.7	9	59.9	9	59.9	9	59.9	9	59.9	9	59.0	9	57.5
	36	8	59.9	9	0.9	9	1.7	8	59.9	8	59.9	8	59.9	8	59.9	8	59.0	8	57.5
	32	7	59.9	8	0.9	8	1.8	7	59.9	7	59.9	7	59.9	7	59.9	7	59.0	7	57.5
	28	6	59.9	7	1.0	7	1.8	6	59.9	6	59.9	6	59.9	6	59.9	6	59.0	6	57.5
	24	5	59.9	6	0.9	6	1.8	5	59.9	5	59.9	5	59.9	5	59.9	5	59.0	5	57.5
	20	4	59.9	5	0.9	5	1.8	4	59.9	4	59.9	4	59.9	4	59.9	4	59.0	4	57.5
	16	3	59.9	4	0.9	4	1.9	3	59.9	3	59.9	3	59.9	3	59.9	3	59.0	3	57.5
	12	2	59.9	3	0.9	3	1.9	2	59.9	2	59.9	2	59.9	2	59.9	2	59.0	2	57.5
	8	1	59.9	2	1.0	2	2.0	1	59.9	1	59.9	1	59.9	1	59.9	1	59.0	1	57.5
	4	0	59.9	1	1.0	1	2.1	0	59.9	0	59.9	0	59.9	0	59.9	0	59.0	0	57.5
18	0	0	0.0	0	1.0	0	2.1	0	3.1	0	4.2	0	5.2	0	6.3	0	7.3	0	8.4

LATITUDE 1°.

Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.		°	'	°	'	°	'	°	'	°	'	°	'	h. m.	
21 0		43 51.2	43 38.9	43 25.6	43 11.5	42 56.2	42 40.2	42 23.4	42 5.5	41 46.9	41 27.3	41 7.0	40 45.9	3 0	
20 56		42 53.8	42 42.0	42 29.2	42 15.4	42 0.8	41 45.2	41 29.0	41 11.7	40 53.7	40 34.8	40 15.1	39 54.6	4	
52		41 56.5	41 44.9	41 32.6	41 19.3	41 5.2	40 50.2	40 34.4	40 17.7	40 0.3	39 42.0	39 22.9	39 3.1	8	
48		40 58.9	40 47.8	40 35.9	40 23.1	40 9.4	39 54.9	39 39.8	39 23.7	39 6.8	38 49.0	38 30.6	38 11.4	12	
44		40 1.3	39 50.7	39 39.2	39 26.8	39 13.6	38 59.6	38 44.9	38 29.4	38 13.0	37 55.9	37 38.0	37 19.5	16	
40		39 3.6	38 53.4	38 42.3	38 30.4	38 17.7	38 4.1	37 49.9	37 34.9	37 19.2	37 2.5	36 45.3	36 27.3	20	
36		38 6.0	37 56.0	37 45.4	37 33.9	37 21.6	37 8.6	36 54.9	36 40.3	36 25.1	36 9.1	35 52.4	35 35.1	24	
32		37 8.2	36 58.7	36 48.3	36 37.3	36 25.5	36 12.9	35 59.8	35 45.6	35 31.0	35 15.4	34 59.4	34 42.6	28	
28		36 10.4	36 1.2	35 51.3	35 40.7	35 29.3	35 17.1	35 4.5	34 50.8	34 36.6	34 21.8	34 6.2	33 50.0	32	
24		35 12.5	35 3.8	34 54.2	34 43.9	34 33.0	34 21.3	34 9.1	33 55.9	33 42.3	33 27.9	33 12.9	32 57.2	36	
20		34 14.6	34 6.2	33 57.0	33 47.1	33 36.6	33 25.3	33 13.6	33 0.9	32 47.8	32 33.9	32 19.4	32 4.3	40	
16		33 16.8	33 8.6	32 59.8	32 50.3	32 40.1	32 29.3	32 17.9	32 5.8	31 53.1	31 39.8	31 25.8	31 11.3	44	
12		32 18.7	32 11.0	32 2.5	31 53.3	31 43.6	31 33.1	31 22.3	31 10.6	30 58.4	30 45.5	30 32.1	30 18.1	48	
8		31 20.7	31 13.2	31 5.1	30 56.3	30 47.0	30 37.0	30 26.6	30 15.3	30 3.5	29 51.2	29 38.2	29 24.9	52	
4		30 22.6	30 15.5	30 7.7	29 59.3	29 50.3	29 40.8	29 30.7	29 19.9	29 8.7	28 56.7	28 44.4	28 31.4	3 56	
20 0		29 24.5	29 17.7	29 10.2	29 2.2	28 53.6	28 44.4	28 34.8	28 24.5	28 13.6	28 2.2	27 50.3	27 37.9	4 0	
19 56		28 26.4	28 19.8	28 12.7	28 5.0	27 56.8	27 48.0	27 38.8	27 28.9	27 18.6	27 7.6	26 56.2	26 44.4	4	
52		27 28.3	27 22.0	27 15.2	27 7.9	27 0.0	26 51.6	26 42.8	26 33.3	26 23.4	26 12.9	26 1.9	25 50.6	8	
48		26 30.0	26 24.1	26 17.6	26 10.6	26 3.1	25 55.1	25 46.7	25 37.6	25 28.2	25 18.1	25 7.7	24 56.7	12	
44		25 31.9	25 26.2	25 20.0	25 13.3	25 6.2	24 58.6	24 50.5	24 41.9	24 32.9	24 23.3	24 13.3	24 2.8	16	
40		24 33.6	24 28.3	24 22.4	24 16.0	24 9.2	24 1.9	23 54.4	23 46.1	23 37.5	23 28.4	23 18.8	23 8.9	20	
36		23 35.4	23 30.3	23 24.7	23 18.7	23 12.2	23 5.3	22 58.1	22 50.2	22 42.0	22 33.3	22 24.3	22 14.8	24	
32		22 37.1	22 32.3	22 27.0	22 21.3	22 15.2	22 8.6	22 1.8	21 54.3	21 46.5	21 38.3	21 29.7	21 20.7	28	
28		21 38.8	21 34.3	21 29.3	21 23.9	21 18.1	21 11.9	21 5.4	20 58.3	20 51.0	20 43.2	20 35.0	20 26.5	32	
24		20 40.5	20 36.2	20 31.6	20 26.5	20 21.0	20 15.1	20 9.0	20 2.3	19 55.4	19 48.0	19 40.3	19 32.2	36	
20		19 42.1	19 38.2	19 33.8	19 29.0	19 23.9	19 18.3	19 12.6	19 6.3	18 59.8	18 52.8	18 45.5	18 37.9	40	
16		18 43.8	18 40.1	18 35.9	18 31.5	18 26.6	18 21.5	18 16.1	18 10.3	18 4.1	17 57.6	17 50.7	17 43.5	44	
12		17 45.4	17 42.0	17 38.1	17 33.9	17 29.5	17 24.6	17 19.7	17 14.1	17 8.4	17 2.2	16 55.8	16 49.1	48	
8		16 47.0	16 43.8	16 40.3	16 36.4	16 32.3	16 27.9	16 23.2	16 18.0	16 12.6	16 6.9	16 0.9	15 54.6	52	
4		15 48.6	15 45.7	15 42.4	15 38.9	15 35.1	15 30.9	15 26.6	15 21.8	15 16.8	15 11.5	15 6.0	15 0.1	4 56	
19 0		14 50.2	14 47.6	14 44.6	14 41.3	14 37.8	14 34.0	14 30.0	14 25.6	14 21.0	14 16.1	14 11.0	14 5.6	5 0	
18 56		13 51.8	13 49.4	13 46.7	13 43.8	13 40.5	13 37.0	13 33.4	13 29.3	13 25.2	13 20.6	13 16.0	13 10.9	4	
52		12 53.4	12 51.3	12 48.8	12 46.1	12 43.2	12 40.0	12 36.8	12 33.1	12 29.3	12 25.2	12 20.8	12 16.3	8	
48		11 55.0	11 53.1	11 50.9	11 48.5	11 45.9	11 43.0	11 40.2	11 36.8	11 33.4	11 29.6	11 25.8	11 21.6	12	
44		10 56.5	10 54.9	10 53.0	10 50.9	10 48.6	10 46.1	10 43.4	10 40.5	10 37.4	10 34.1	10 30.6	10 27.0	16	
40		9 58.1	9 56.7	9 55.0	9 53.2	9 51.2	9 49.0	9 46.8	9 44.2	9 41.5	9 38.6	9 35.5	9 32.2	20	
36		8 59.6	8 58.5	8 57.1	8 55.6	8 53.9	8 52.0	8 50.1	8 47.8	8 45.5	8 43.0	8 40.3	8 37.5	24	
32		8 1.2	8 0.2	7 59.2	7 57.9	7 56.5	7 55.0	7 53.4	7 51.5	7 49.5	7 47.5	7 45.1	7 42.8	28	
28		7 2.7	7 2.1	7 1.2	7 0.2	6 59.1	6 57.9	6 56.7	6 55.1	6 53.6	6 51.8	6 50.0	6 48.0	32	
24		6 4.3	6 3.8	6 3.3	6 2.6	6 1.8	6 0.8	5 59.9	5 58.8	5 57.6	5 56.2	5 54.8	5 53.2	36	
20		5 5.8	5 5.7	5 5.3	5 4.9	5 4.4	5 3.8	5 3.2	5 2.4	5 1.6	5 0.6	4 59.2	4 58.4	40	
16		4 7.4	4 7.4	4 7.4	4 7.2	4 7.0	4 6.7	4 6.5	4 6.0	4 5.5	4 4.9	4 4.3	4 3.6	44	
12		3 8.9	3 9.2	3 9.4	3 9.6	3 9.7	3 9.7	3 9.8	3 9.6	3 9.5	3 9.3	3 9.1	3 8.8	48	
8		2 10.4	2 10.9	2 11.4	2 11.9	2 12.3	2 12.6	2 13.1	2 13.2	2 13.5	2 13.7	2 13.8	2 14.0	52	
4		1 12.0	1 12.8	1 13.5	1 14.2	1 14.9	1 15.6	1 16.3	1 16.9	1 17.5	1 18.0	1 18.6	1 19.1	5 56	
18 0		0 13.5	0 14.6	0 15.5	0 16.6	0 17.5	0 18.5	0 19.6	0 20.5	0 21.5	0 22.5	0 23.4	0 24.3	6 0	

TRUE ALTITUDE OF BODY.

LATITUDE 1°.

Yesterday Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE.														Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°			
<i>h.</i>	<i>m.</i>	°		°		°		°		°		°		°		<i>h.</i>	<i>m.</i>
24	0	89	0.0	88	0.0	87	0.0	86	0.0	85	0.0	84	0.0	83	0.0	82	0.0
38	56	88	35.2	87	45.8	86	50.2	85	52.6	84	54.1	83	55.0	82	55.6	81	56.3
	52	87	45.8	87	10.2	86	23.7	85	31.7	84	36.9	83	40.6	82	43.2	81	45.3
	48	86	50.2	86	23.7	85	45.5	85	0.0	84	10.3	83	17.6	82	23.2	81	27.5
	44	85	52.7	85	31.6	85	0.0	84	20.7	83	36.0	82	47.4	81	56.4	81	3.6
	40	84	54.1	84	37.1	84	10.2	83	35.9	82	55.9	82	11.5	81	24.1	80	34.3
	36	83	55.0	83	40.4	83	17.6	82	47.5	82	11.6	81	31.1	80	47.2	80	0.3
	32	82	55.8	82	43.2	82	23.1	81	56.4	81	24.2	80	47.0	80	6.8	79	22.8
	28	81	56.3	81	45.2	81	27.4	81	3.6	80	34.4	80	0.4	79	22.6	78	41.9
	24	80	56.7	80	46.8	80	30.9	80	9.2	79	42.6	79	11.5	78	36.5	77	58.4
	20	79	57.0	79	48.1	79	33.7	79	14.0	78	49.5	78	20.8	77	48.4	77	12.6
	16	78	57.3	78	49.2	78	36.0	78	17.8	77	55.2	77	28.8	76	58.5	76	25.2
	12	77	57.5	77	50.0	77	37.9	77	21.2	77	0.3	76	35.8	76	7.5	75	36.0
	8	76	57.7	76	50.7	76	39.6	76	24.1	76	4.8	75	41.8	75	15.2	74	45.7
	4	75	57.9	75	51.4	75	41.1	75	26.6	75	8.5	74	46.9	74	22.0	73	54.1
23	0	74	58.1	74	52.0	74	42.3	74	28.8	74	11.9	73	51.7	73	28.1	73	1.8
22	56	73	58.2	73	52.5	73	43.4	73	30.8	73	14.8	72	55.7	72	33.6	72	8.6
	52	72	58.3	72	53.0	72	44.3	72	32.4	72	17.3	71	59.5	71	38.4	71	14.8
	48	71	58.4	71	53.4	71	45.3	71	34.0	71	19.7	71	2.8	70	42.8	70	20.4
	44	70	58.5	70	53.8	70	46.1	70	35.5	70	21.9	70	5.7	69	46.7	69	25.4
	40	69	58.6	69	54.1	69	46.8	69	36.7	69	23.8	69	8.5	68	50.4	68	30.0
	36	68	58.6	68	54.4	68	47.4	68	37.8	68	25.5	68	10.9	67	53.7	67	34.1
	32	67	58.7	67	54.6	67	48.1	67	38.7	67	27.1	67	13.2	66	56.7	66	38.2
	28	66	58.8	66	54.9	66	48.6	66	39.8	66	28.5	66	15.2	65	59.6	65	41.7
	24	65	58.8	65	55.2	65	49.1	65	40.7	65	29.9	65	17.2	65	2.2	64	45.1
	20	64	58.9	64	55.3	64	49.6	64	41.6	64	31.2	64	19.0	64	4.5	63	48.3
	16	63	59.0	63	55.5	63	49.9	63	42.3	63	32.4	63	20.7	63	6.9	62	51.1
	12	62	59.0	62	55.7	62	50.4	62	42.8	62	33.5	62	22.3	62	8.9	61	53.8
	8	61	59.0	61	55.8	61	50.6	61	43.5	61	34.5	61	23.7	61	10.9	60	56.3
	4	60	59.0	60	55.9	60	51.0	60	44.1	60	35.4	60	25.1	60	12.7	59	58.8
22	0	59	59.1	59	56.1	59	51.3	59	44.7	59	36.3	59	26.3	59	14.5	59	1.0
21	56	58	59.1	58	56.2	58	51.6	58	45.2	58	37.1	58	27.5	58	16.0	58	3.1
	52	57	59.2	57	56.3	57	51.9	57	45.7	57	37.9	57	28.6	57	17.6	57	5.1
	48	56	59.2	56	56.5	56	52.1	56	46.2	56	38.6	56	29.7	56	19.0	56	7.0
	44	55	59.2	55	56.5	55	52.4	55	46.6	55	39.3	55	30.7	55	20.4	55	8.8
	40	54	59.2	54	56.7	54	52.6	54	47.1	54	40.0	54	31.6	54	21.7	54	10.4
	36	53	59.3	53	56.7	53	52.9	53	47.4	53	40.7	53	32.6	53	22.9	53	12.1
	32	52	59.3	52	56.9	52	53.0	52	47.9	52	41.2	52	33.4	52	24.2	52	13.5
	28	51	59.3	51	56.9	51	53.3	51	48.2	51	41.9	51	34.3	51	25.3	51	15.0
	24	50	59.3	50	57.1	50	53.4	50	48.6	50	42.4	50	35.1	50	26.3	50	16.4
	20	49	59.4	49	57.1	49	53.7	49	48.9	49	42.9	49	35.7	49	27.4	49	17.7
	16	48	59.4	48	57.2	48	53.8	48	49.2	48	43.3	48	36.5	48	28.3	48	19.0
	12	47	59.4	47	57.3	47	54.0	47	49.5	47	43.9	47	37.1	47	29.3	47	20.3
	8	46	59.4	46	57.4	46	54.1	46	49.8	46	44.3	46	37.8	46	30.1	46	21.5
	4	45	59.5	45	57.4	45	54.3	45	50.0	45	44.7	45	38.4	45	31.0	45	22.6
21	0	44	59.5	44	57.5	44	54.4	44	50.3	44	45.2	44	39.1	44	31.9	44	23.7

LATITUDE 1°.													
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	76 0 0	75 0 0	74 0 0	73 0 0	72 0 0	71 0 0	70 0 0	69 0 0	68 0 0	67 0 0	66 0 0	65 0 0	0 0
23 56	75 57.9	74 58.0	73 58.1	72 58.2	71 58.5	70 58.4	69 58.5	68 58.5	67 58.8	66 58.6	65 58.9	64 58.9	4
52	75 51.7	74 52.2	73 52.7	72 53.0	71 53.5	70 53.9	69 54.2	68 54.5	67 54.7	66 54.9	65 55.2	64 55.5	8
48	75 41.4	74 42.5	73 43.6	72 44.4	71 45.6	70 46.3	69 47.3	68 47.7	67 48.3	66 48.9	65 49.4	64 49.8	12
44	75 27.0	74 29.2	73 31.0	72 32.8	71 34.4	70 35.7	69 37.3	68 38.2	67 39.3	66 40.3	65 41.1	64 41.9	16
40	75 8.8	74 12.2	73 15.2	72 17.8	71 20.2	70 22.4	69 24.5	68 26.1	67 27.8	66 29.2	65 30.6	64 31.9	20
36	74 47.2	73 51.9	72 56.1	71 59.8	71 3.3	70 6.2	69 9.1	68 11.4	67 13.8	66 15.8	65 17.9	64 19.7	24
32	74 22.4	73 28.5	72 34.0	71 38.9	70 43.4	69 47.4	68 51.2	67 54.4	66 57.4	66 0.3	65 2.9	64 5.5	28
28	73 54.6	73 2.2	72 9.1	71 15.2	70 21.0	69 26.0	68 30.9	67 34.9	66 39.0	65 42.4	64 46.0	63 49.2	32
24	73 24.0	72 33.0	71 41.5	70 49.0	69 56.0	69 2.2	68 8.1	67 13.3	66 18.1	65 22.7	64 26.9	63 30.9	36
20	72 50.7	72 1.5	71 11.4	70 20.3	69 28.7	68 36.0	67 43.3	66 49.4	65 55.4	65 0.8	64 5.9	63 10.7	40
16	72 15.2	71 27.6	70 39.1	69 49.5	68 59.1	68 8.0	67 16.2	66 23.5	65 30.6	64 36.9	63 43.1	62 48.7	44
12	71 37.6	70 51.8	70 4.7	69 16.5	68 27.7	67 37.6	66 47.3	65 55.7	65 3.9	64 11.3	63 18.4	62 25.0	48
8	70 58.0	70 14.0	69 28.5	68 41.8	67 54.2	67 5.6	66 16.5	65 26.1	64 35.4	63 43.8	62 52.0	61 59.5	52
4	70 16.8	69 34.3	68 50.4	68 5.1	67 19.1	66 31.8	65 43.8	64 54.8	64 5.2	63 14.8	62 23.9	61 32.5	0 56
23 0	69 34.2	68 53.2	68 10.7	67 27.0	66 42.3	65 56.3	65 9.6	64 21.8	63 33.4	62 44.1	61 54.4	61 3.9	1 0
22 56	68 50.3	68 10.7	67 29.7	66 47.5	66 4.0	65 19.4	64 34.0	63 47.4	63 0.1	62 12.0	61 23.3	60 33.9	4
52	68 5.0	67 27.0	66 47.4	66 6.4	65 24.4	64 41.0	63 56.9	63 11.4	62 25.5	61 38.5	60 50.9	60 2.5	8
48	67 18.7	66 42.1	66 3.8	65 24.2	64 43.4	64 1.4	63 18.5	62 34.3	61 49.4	61 3.6	60 17.0	59 29.8	12
44	66 31.5	65 56.1	65 19.2	64 40.8	64 1.4	63 20.5	62 38.9	61 55.8	61 12.2	60 27.4	59 42.0	58 55.8	16
40	65 43.2	65 9.2	64 33.4	63 56.5	63 18.1	62 38.7	61 58.1	61 16.3	60 33.7	59 50.1	59 5.8	58 20.7	20
36	64 54.3	64 21.4	63 46.9	63 11.0	62 34.1	61 55.6	61 16.4	60 35.7	59 54.2	59 11.8	58 28.5	57 44.4	24
32	64 4.4	63 32.8	62 59.4	62 24.9	61 48.9	61 11.8	60 33.6	59 54.1	59 13.8	58 32.2	57 50.1	57 7.1	28
28	63 14.0	62 43.5	62 11.3	61 37.8	61 3.1	60 27.0	59 49.9	59 11.5	58 32.2	57 51.9	57 10.7	56 28.7	32
24	62 23.0	61 53.6	61 22.4	60 50.0	60 16.4	59 41.4	59 5.4	58 28.1	57 49.9	57 10.6	56 30.5	55 49.5	36
20	61 31.5	61 3.0	60 33.0	60 1.6	59 29.0	58 55.1	58 20.2	57 43.8	57 6.7	56 28.4	55 49.3	55 9.4	40
16	60 39.4	60 12.0	59 42.8	59 12.5	58 40.9	58 8.0	57 34.1	56 58.9	56 22.6	55 45.5	55 7.4	54 28.4	44
12	59 46.9	59 20.4	58 52.2	58 22.9	57 52.2	57 20.3	56 47.4	56 13.1	55 38.0	55 1.7	54 24.7	53 46.8	48
8	58 54.0	58 28.3	58 1.1	57 32.6	57 3.0	56 32.0	56 0.0	55 26.7	54 52.6	54 17.4	53 41.3	53 4.2	52
4	58 0.7	57 35.9	57 9.5	56 41.9	56 13.2	55 43.1	55 12.1	54 39.8	54 6.6	53 32.3	52 57.2	52 21.1	1 56
22 0	57 7.1	56 43.0	56 17.5	55 50.7	55 22.9	54 53.8	54 23.7	53 52.3	53 20.0	52 46.6	52 12.5	51 37.3	2 0
21 56	56 13.1	55 49.8	55 25.1	54 59.2	54 32.2	54 4.0	53 34.7	53 4.3	52 32.8	52 0.4	51 27.0	50 52.9	4
52	55 18.7	54 56.3	54 32.3	54 7.2	53 41.1	53 13.6	52 45.3	52 15.7	51 45.2	51 13.5	50 41.2	50 7.8	8
48	54 24.2	54 2.3	53 39.2	53 14.9	52 49.5	52 23.0	51 55.4	51 26.6	50 56.9	50 26.3	49 54.7	49 22.3	12
44	53 29.3	53 8.3	52 45.8	52 22.2	51 57.7	51 31.8	51 5.2	50 37.1	50 8.3	49 38.4	49 7.8	48 36.2	16
40	52 34.3	52 13.9	51 52.1	51 29.3	51 5.4	50 40.5	50 14.4	49 47.3	49 19.2	48 50.2	48 20.3	47 49.6	20
36	51 39.1	51 19.3	50 58.2	50 36.0	50 12.9	49 48.6	49 23.4	48 57.0	48 29.8	48 1.5	47 32.5	47 2.5	24
32	50 43.6	50 24.4	50 4.0	49 42.5	49 20.0	48 56.4	48 32.0	48 6.4	47 39.9	47 12.4	46 44.1	46 15.0	28
28	49 48.0	49 29.3	49 9.6	48 48.7	48 27.0	48 4.0	47 40.3	47 15.4	46 49.7	46 22.9	45 55.5	45 27.1	32
24	48 52.0	48 34.1	48 14.9	47 54.7	47 33.6	47 11.3	46 48.3	46 24.0	45 59.1	45 33.2	45 6.4	44 38.8	36
20	47 56.1	47 38.6	47 20.1	47 0.4	46 40.0	46 18.4	45 56.0	45 32.5	45 8.2	44 43.0	44 17.0	43 50.2	40
16	46 59.9	46 43.1	46 24.9	46 6.0	45 46.1	45 25.2	45 3.5	44 40.6	44 17.1	43 52.5	43 27.3	43 1.1	44
12	46 3.7	45 47.2	45 29.8	45 11.3	44 52.1	44 31.7	44 10.7	43 48.5	43 25.6	43 1.7	42 37.1	42 11.8	48
8	45 7.1	44 51.3	44 34.3	44 16.5	43 57.8	43 38.1	43 17.6	42 56.1	42 33.9	42 10.7	41 46.8	41 22.1	52
4	44 10.6	43 55.2	43 38.8	43 21.4	43 3.3	42 44.2	42 24.4	42 3.5	41 41.9	41 19.4	40 56.2	40 32.2	2 56
21 0	43 13.9	42 59.0	42 43.0	42 26.3	42 8.7	41 50.2	41 30.9	41 10.6	40 49.6	40 27.8	40 5.3	39 42.0	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 1°.

Hour		DECLINATION — <i>contrary Name to</i> — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.		
m.														Declination		
Contrary Name.		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.
0	44 59.5	44 57.5	44 54.4	44 50.3	44 45.2	44 39.1	44 31.9	44 23.7	44 14.5	44 4.3	43 53.2	43 41.0	43 27.9	h. m.	h. m.	
56	43 59.5	43 57.5	43 54.6	43 50.6	43 45.5	43 39.7	43 32.7	43 24.8	43 15.8	43 6.0	42 55.2	42 43.4	42 30.7	3 0	9 0	
52	42 59.5	42 57.6	42 54.7	42 50.8	42 46.0	42 40.2	42 33.5	42 25.8	42 17.2	42 7.6	41 57.1	41 45.7	41 33.4	4	8 56	
48	41 59.5	41 57.6	41 54.8	41 51.1	41 46.3	41 40.8	41 34.2	41 26.8	41 18.4	41 9.1	40 59.0	40 47.9	40 36.0	8	52	
44	40 59.5	40 57.7	40 54.9	40 51.3	40 46.7	40 41.3	40 35.0	40 27.7	40 19.6	40 10.7	40 0.8	39 50.1	39 38.5	12	48	
40	39 59.6	39 57.8	39 55.1	39 51.5	39 47.0	39 41.8	39 35.7	39 28.7	39 20.8	39 12.1	39 2.6	38 52.2	38 41.0	16	44	
36	38 59.6	38 57.8	38 55.2	38 51.6	38 47.4	38 42.3	38 36.3	38 29.5	38 21.9	38 13.5	38 4.3	37 54.2	37 43.4	20	40	
32	37 59.6	37 57.9	37 55.3	37 51.9	37 47.7	37 42.8	37 37.0	37 30.3	37 23.0	37 14.9	37 5.9	36 56.2	36 45.7	24	36	
28	36 59.6	36 57.8	36 55.4	36 52.1	36 48.0	36 43.2	36 37.6	36 31.2	36 24.1	36 16.2	36 7.5	35 58.1	35 47.9	28	32	
24	35 59.6	35 58.0	35 55.5	35 52.3	35 48.3	35 43.7	35 38.2	35 32.0	35 25.1	35 17.5	35 9.1	35 0.3	34 50.1	32	28	
20	34 59.6	34 57.9	34 55.6	34 52.5	34 48.6	34 44.1	34 38.8	34 32.8	34 26.1	34 18.7	34 10.6	34 1.8	33 52.3	36	24	
16	33 59.7	33 58.0	33 55.7	33 52.7	33 48.9	33 44.6	33 39.4	33 33.6	33 27.1	33 19.9	33 12.1	33 3.5	32 54.4	40	20	
12	32 59.7	32 58.0	32 55.8	32 52.8	32 49.2	32 44.9	32 40.0	32 34.3	32 28.0	32 21.1	32 13.5	32 5.3	31 56.4	44	16	
8	31 59.7	31 58.1	31 55.9	31 53.0	31 49.4	31 45.4	31 40.5	31 35.1	31 29.0	31 22.3	31 14.9	31 7.0	30 58.4	48	12	
4	30 59.7	30 58.1	30 56.0	30 53.2	30 49.8	30 45.7	30 41.1	30 35.8	30 29.9	30 23.4	30 16.3	30 8.6	30 0.3	52	8	
0	29 59.7	29 58.2	29 56.1	29 53.3	29 50.0	29 46.1	29 41.5	29 36.5	29 30.8	29 24.6	29 17.6	29 10.2	29 2.2	3 56	4	
56	28 59.7	28 58.2	28 56.2	28 53.5	28 50.2	28 46.5	28 42.1	28 37.2	28 31.7	28 25.6	28 19.0	28 11.8	28 4.0	4 0	8 0	
52	27 59.7	27 58.2	27 56.2	27 53.6	27 50.4	27 46.8	27 42.6	27 37.9	27 32.5	27 26.7	27 20.2	27 13.4	27 5.8	4	7 56	
48	26 59.7	26 58.3	26 56.3	26 53.7	26 50.7	26 47.2	26 43.1	26 38.5	26 33.4	26 27.7	26 21.6	26 14.8	26 7.7	8	52	
44	25 59.7	25 58.3	25 56.4	25 53.9	25 50.9	25 47.6	25 43.6	25 39.2	25 34.1	25 28.7	25 22.7	25 16.4	25 9.4	12	48	
40	24 59.8	24 58.3	24 56.4	24 54.1	24 51.2	24 47.9	24 44.0	24 39.7	24 35.0	24 29.7	24 24.0	24 17.8	24 11.2	16	44	
36	23 59.8	23 58.3	23 56.5	23 54.2	23 51.4	23 48.2	23 44.5	23 40.4	23 35.7	23 30.7	23 25.2	23 19.2	23 12.8	20	40	
32	22 59.8	22 58.3	22 56.6	22 54.3	22 51.6	22 48.5	22 45.0	22 40.9	22 36.5	22 31.7	22 26.4	22 20.6	22 14.5	24	36	
28	21 59.8	21 58.4	21 56.6	21 54.5	21 51.8	21 48.9	21 45.4	21 41.6	21 37.3	21 32.6	21 27.5	21 22.0	21 16.1	28	32	
24	20 59.8	20 58.4	20 56.7	20 54.6	20 52.0	20 49.2	20 45.8	20 42.1	20 38.1	20 33.6	20 28.7	20 23.4	20 17.7	32	28	
20	19 59.8	19 58.5	19 56.8	19 54.7	19 52.2	19 49.5	19 46.3	19 42.7	19 38.8	19 34.5	19 29.8	19 24.7	19 19.3	36	24	
16	18 59.8	18 58.5	18 56.9	18 54.8	18 52.4	18 49.8	18 46.7	18 43.3	18 39.5	18 35.4	18 30.9	18 26.0	18 20.8	40	20	
12	17 59.8	17 58.5	17 56.9	17 55.0	17 52.6	17 50.1	17 47.1	17 43.8	17 40.2	17 36.2	17 32.0	17 27.3	17 22.4	44	16	
8	16 59.8	16 58.5	16 57.0	16 55.1	16 52.8	16 50.4	16 47.5	16 44.3	16 40.8	16 37.1	16 33.0	16 28.6	16 23.9	48	12	
4	15 59.8	15 58.6	15 57.0	15 55.2	15 53.0	15 50.7	15 47.9	15 44.9	15 41.6	15 37.9	15 34.1	15 29.9	15 25.4	52	8	
0	14 59.9	14 58.6	14 57.1	14 55.3	14 53.3	14 50.9	14 48.3	14 45.4	14 42.2	14 38.8	14 35.1	14 31.1	14 26.8	4 56	4	
56	13 59.9	13 58.7	13 57.2	13 55.4	13 53.4	13 51.2	13 48.7	13 45.9	13 42.9	13 39.6	13 36.1	13 32.3	13 28.3	5 0	7 0	
52	12 59.9	12 58.7	12 57.2	12 55.5	12 53.6	12 51.5	12 49.1	12 46.5	12 43.6	12 40.5	12 37.1	12 33.5	12 29.7	4	6 56	
48	11 59.9	11 58.7	11 57.3	11 55.6	11 53.8	11 51.7	11 49.5	11 47.0	11 44.2	11 41.3	11 38.1	11 34.7	11 31.2	8	52	
44	10 59.9	10 58.7	10 57.3	10 55.8	10 53.9	10 52.0	10 49.8	10 47.4	10 44.9	10 42.1	10 39.1	10 36.0	10 32.6	12	48	
40	9 59.9	9 58.7	9 57.4	9 55.9	9 54.1	9 52.3	9 50.1	9 47.9	9 45.5	9 42.9	9 40.1	9 37.2	9 34.0	16	44	
36	8 59.9	8 58.8	8 57.4	8 56.0	8 54.3	8 52.5	8 50.6	8 48.4	8 46.1	8 43.7	8 41.1	8 38.4	8 35.4	20	40	
32	8 0.0	7 58.7	7 57.5	7 56.1	7 54.5	7 52.8	7 50.9	7 48.9	7 46.8	7 44.5	7 42.1	7 39.5	7 36.8	24	36	
28	7 0.0	6 58.8	6 57.5	6 56.2	6 54.6	6 53.0	6 51.3	6 49.4	6 47.4	6 45.3	6 43.0	6 40.6	6 38.2	28	32	
24	6 0.0	5 58.8	5 57.6	5 56.2	5 54.8	5 53.3	5 51.6	5 49.9	5 48.0	5 46.1	5 44.0	5 41.8	5 39.5	32	28	
20	5 0.0	4 58.8	4 57.6	4 56.3	4 54.9	4 53.6	4 52.0	4 50.4	4 48.7	4 46.8	4 44.9	4 43.0	4 40.9	36	24	
16	4 0.0	3 58.8	3 57.7	3 56.4	3 55.1	3 53.8	3 52.4	3 50.8	3 49.3	3 47.6	3 45.9	3 44.1	3 42.2	40	20	
12	3 0.0	2 58.8	2 57.7	2 56.6	2 55.3	2 54.1	2 52.7	2 51.3	2 49.9	2 48.3	2 46.8	2 45.2	2 43.6	44	16	
8	2 0.0	1 58.9	1 57.8	1 56.7	1 55.5	1 54.3	1 53.1	1 51.7	1 50.4	1 49.1	1 47.7	1 46.3	1 44.9	48	12	
4	1 0.0	0 58.9	0 57.9	0 56.8	0 55.7	0 54.6	0 53.3	0 52.2	0 51.1	0 49.9	0 48.7	0 47.4	0 46.2	52	8	
0	0 0.0	0 1.0	0 2.1	0 3.1	0 4.2	0 5.2	0 6.3	0 7.3	0 8.4	0 9.4	0 10.4	0 11.4	0 12.5	5 56	4	
0	0 0.0	0 1.0	0 2.1	0 3.1	0 4.2	0 5.2	0 6.3	0 7.3	0 8.4	0 9.4	0 10.4	0 11.4	0 12.5	6 0	6 0	

The heavy zigzag line is the horizon line.

The heavy zigzag line is the horizon line and separates contrary names from same names.

LATITUDE 1°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.			
		Declination												Declination			
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.		
h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	h. m.		
15 0	21 0	43 13.9	42 59.0	42 43.0	42 26.3	42 8.7	41 50.2	41 30.9	41 10.6	40 49.6	40 27.8	40 5.3	39 42.0	3 0	9 0		
4	20 56	42 17.2	42 2.7	41 47.3	41 31.0	41 13.9	40 56.0	40 37.2	40 17.5	39 57.2	39 36.0	39 14.2	38 51.5	4	8 56		
8	52	41 20.3	41 6.3	40 51.3	40 35.5	40 18.9	40 1.5	39 43.3	39 24.3	39 4.5	38 44.0	38 22.7	38 0.8	8	52		
12	48	40 23.3	40 9.7	39 55.2	39 39.8	39 23.8	39 6.8	38 49.4	38 30.8	38 11.7	37 51.7	37 31.1	37 9.8	12	48		
16	44	39 26.2	39 13.0	38 59.0	38 44.1	38 28.6	38 12.2	37 55.1	37 37.2	37 18.6	36 59.2	36 39.2	36 18.5	16	44		
20	40	38 29.0	38 16.3	38 2.6	37 48.3	37 33.2	37 17.3	37 0.8	36 43.4	36 25.4	36 6.5	35 47.2	35 27.1	20	40		
24	36	37 31.8	37 19.4	37 6.2	36 52.3	36 37.7	36 22.4	36 6.3	35 49.5	35 31.9	35 13.8	34 54.9	34 35.5	24	36		
28	32	36 34.4	36 22.5	36 9.7	35 56.2	35 42.1	35 27.2	35 11.7	34 55.3	34 38.4	34 20.7	34 2.5	33 43.6	28	32		
32	28	35 37.1	35 25.5	35 13.1	35 0.1	34 46.4	34 31.9	34 16.9	34 1.1	33 44.7	33 27.6	33 9.9	32 51.6	32	28		
36	24	34 39.6	34 28.4	34 16.5	34 3.8	33 50.5	33 36.0	33 22.0	33 6.7	32 50.8	32 34.2	32 17.2	31 59.4	36	24		
40	20	33 42.1	33 31.3	33 19.7	33 7.4	32 54.6	32 41.1	32 27.0	32 12.2	31 56.8	31 40.8	31 24.3	31 7.1	40	20		
44	16	32 44.6	32 34.0	32 22.8	32 11.0	31 58.6	31 45.5	31 31.9	31 17.6	31 2.7	30 47.2	30 31.2	30 14.6	44	16		
48	12	31 46.9	31 36.8	31 25.9	31 14.5	31 2.5	30 49.9	30 36.7	30 22.8	30 8.5	29 53.4	29 38.0	29 21.9	48	12		
52	8	30 49.2	30 39.4	30 28.9	30 17.8	30 6.3	29 54.1	29 41.4	29 28.0	29 14.1	28 59.5	28 44.6	28 29.1	52	8		
15 56	4	29 51.4	29 42.0	29 31.8	29 21.2	29 10.0	28 58.2	28 46.0	28 33.0	28 19.6	28 5.5	27 51.2	27 36.1	3 56	4		
16 0	20 0	28 53.6	28 44.5	28 34.7	28 24.5	28 13.7	28 2.3	27 50.4	27 38.0	27 25.0	27 11.5	26 57.6	26 43.1	4 0	8 0		
4	19 56	27 55.8	27 47.0	27 37.6	27 27.6	27 17.3	27 6.3	26 54.9	26 42.8	26 30.4	26 17.2	26 3.9	25 49.8	4	7 56		
8	52	26 57.9	26 49.4	26 40.3	26 30.8	26 20.8	26 10.2	25 59.2	25 47.6	25 35.5	25 23.0	25 10.0	24 56.6	8	52		
12	48	26 0.0	25 51.8	25 43.0	25 33.8	25 24.2	25 14.0	25 3.5	24 52.2	24 40.7	24 28.6	24 16.1	24 3.1	12	48		
16	44	25 2.1	24 54.1	24 45.7	24 36.8	24 27.5	24 17.8	24 7.6	23 56.9	23 45.7	23 34.0	23 22.1	23 9.6	16	44		
20	40	24 4.0	23 56.5	23 48.3	23 39.8	23 30.9	23 21.4	23 11.7	23 1.3	22 50.7	22 39.5	22 27.9	22 16.0	20	40		
24	36	23 6.0	22 58.7	22 50.9	22 42.7	22 34.2	22 25.2	22 15.7	22 5.8	21 55.5	21 44.8	21 33.8	21 22.3	24	36		
28	32	22 7.9	22 1.0	21 53.5	21 45.6	21 37.4	21 28.7	21 19.7	21 10.1	21 0.3	20 50.0	20 39.5	20 28.5	28	32		
32	28	21 9.8	21 3.1	20 56.0	20 48.4	20 40.6	20 32.2	20 23.6	20 14.5	20 5.0	19 55.3	19 45.1	19 34.6	32	28		
36	24	20 11.7	20 5.3	19 58.4	19 51.2	19 43.7	19 35.7	19 27.5	19 18.7	19 9.8	19 0.3	18 50.7	18 40.6	36	24		
40	20	19 13.5	19 7.4	19 0.8	18 53.9	18 46.8	18 39.1	18 31.3	18 23.0	18 14.4	18 5.4	17 56.1	17 46.6	40	20		
44	16	18 15.3	18 9.5	18 3.2	17 56.6	17 49.8	17 42.6	17 35.1	17 27.2	17 19.0	17 10.4	17 1.6	16 52.4	44	16		
48	12	17 17.1	17 11.5	17 5.6	16 59.3	16 52.8	16 45.9	16 38.8	16 31.2	16 23.4	16 15.3	16 6.9	16 58.2	48	12		
52	8	16 18.9	16 13.6	16 7.9	16 1.9	15 55.8	15 49.3	15 42.5	15 35.3	15 27.9	15 20.2	15 12.2	15 4.0	52	8		
16 56	4	15 20.6	15 15.6	15 10.2	15 4.6	14 58.7	14 52.5	14 46.1	14 39.3	14 32.4	14 25.0	14 17.5	14 9.7	4 56	4		
17 0	19 0	14 22.3	14 17.6	14 12.5	14 7.1	14 1.6	13 55.8	13 49.7	13 43.3	13 36.7	13 29.8	13 22.7	13 15.4	5 0	7 0		
4	18 56	13 24.0	13 19.6	13 14.8	13 9.7	13 4.5	12 58.9	12 53.3	12 47.2	12 41.0	12 34.4	12 27.9	12 20.9	4	6 56		
8	52	12 25.7	12 21.5	12 17.0	12 12.2	12 7.3	12 2.1	11 56.8	11 51.1	11 45.2	11 39.2	11 32.9	11 26.5	8	52		
12	48	11 27.4	11 23.4	11 19.2	11 14.7	11 10.1	11 5.3	11 0.3	10 54.9	10 49.5	10 43.8	10 38.0	10 31.9	12	48		
16	44	10 29.1	10 25.3	10 21.4	10 17.2	10 12.9	10 8.4	10 3.7	9 58.8	9 53.7	9 48.4	9 43.0	9 37.4	16	44		
20	40	9 30.7	9 27.2	9 23.5	9 19.6	9 15.7	9 11.4	9 7.2	9 2.6	8 57.9	8 53.0	8 48.0	8 42.8	20	40		
24	36	8 32.3	8 29.1	8 25.6	8 22.1	8 18.4	8 14.6	8 10.6	8 6.3	8 2.0	7 57.5	7 53.0	7 48.2	24	36		
28	32	7 34.0	7 31.0	7 27.8	7 24.5	7 21.1	7 17.6	7 14.0	7 10.1	7 6.2	7 2.0	6 57.9	6 53.6	28	32		
32	28	6 35.5	6 32.9	6 29.9	6 26.9	6 23.8	6 20.6	6 17.3	6 13.8	6 10.3	6 6.6	6 2.8	5 58.9	32	28		
36	24	5 37.2	5 34.7	5 32.0	5 29.3	5 26.5	5 23.6	5 20.7	5 17.5	5 14.3	5 11.0	5 7.7	5 4.2	36	24		
40	20	4 38.7	4 36.5	4 34.1	4 31.7	4 29.2	4 26.6	4 24.0	4 21.2	4 18.4	4 15.5	4 12.5	4 9.5	40	20		
44	16	3 40.3	3 38.3	3 36.2	3 34.0	3 31.9	3 29.6	3 27.3	3 24.9	3 22.4	3 19.9	3 17.3	3 14.7	44	16		
48	12	2 41.8	2 40.1	2 38.3	2 36.4	2 34.5	2 32.6	2 30.7	2 28.5	2 26.5	2 24.2	2 22.2	2 19.9	48	12		
52	8	1 43.5	1 41.9	1 40.3	1 38.8	1 37.2	1 35.6	1 34.0	1 32.2	1 30.5	1 28.7	1 26.9	1 25.2	52	8		
17 56	4	0 45.0	0 43.7	0 42.3	0 41.1	0 39.8	0 38.5	0 37.2	0 35.8	0 34.5	0 33.0	0 31.7	0 30.4	5 56	4		
18 0	18 0	0 13.5	0 14.6	0 15.5	0 16.6	0 17.5	0 18.6	0 19.5	0 20.5	0 21.5	0 22.5	0 23.5	0 24.3	6 0	6 0		

LATITUDE 2°.															
Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.		
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°		
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	88 0	0	89 0	0	90 0	0	89 0	0	88 0	0	87 0	0	86 0	0	0 0
23 56	87 45	7	88 35	2	89 0	0	88 35	2	87 45	9	86 50	3	85 52	6	4 0
52	87 10	2	87 45	9	88 0	0	87 46	0	87 10	4	86 23	8	85 31	8	8 0
48	86 23	7	86 50	3	87 0	0	86 50	5	86 23	8	85 45	7	85 0	2	12 0
44	85 31	7	85 52	8	86 0	0	85 52	8	85 32	0	85 0	4	84 21	0	16 0
40	84 36	8	84 54	2	85 0	0	84 54	4	84 37	3	84 10	6	83 36	4	20 0
36	83 40	8	83 55	2	84 0	0	83 55	4	83 41	0	83 18	1	82 48	1	24 0
32	82 43	2	82 55	9	83 0	0	82 56	1	82 43	7	82 23	8	81 57	1	28 0
28	81 45	3	81 56	4	82 0	0	81 56	7	81 45	8	81 28	2	81 4	4	32 0
24	80 46	8	80 56	9	81 0	0	80 57	2	80 47	6	80 31	7	80 10	3	36 0
20	79 48	2	79 57	2	80 0	0	79 57	6	79 49	0	79 34	6	79 15	2	40 0
16	78 49	3	78 57	5	79 0	0	78 57	9	78 50	7	78 37	2	78 19	3	44 0
12	77 50	2	77 57	8	78 0	0	77 58	2	77 51	1	77 39	2	77 22	8	48 0
8	76 51	0	76 58	0	77 0	0	76 58	5	76 51	9	76 41	0	76 25	9	52 0
4	75 51	6	75 58	2	76 0	0	75 58	6	75 52	7	75 42	6	75 28	4	56 0
23 0	74 52	2	74 58	3	75 0	0	74 58	9	74 53	3	74 43	9	74 30	9	0 0
22 56	73 52	7	73 58	5	74 0	0	73 58	2	73 53	8	73 45	0	73 32	9	4 0
52	72 53	2	72 58	6	73 0	0	72 59	4	72 54	4	72 46	0	72 34	8	8 0
48	71 53	5	71 58	8	72 0	0	71 59	5	71 54	9	71 47	2	71 36	4	12 0
44	70 54	0	70 58	9	71 0	0	70 59	5	70 55	4	70 48	1	70 37	9	16 0
40	69 54	2	69 58	9	70 0	0	69 59	7	69 55	7	69 48	9	69 39	4	20 0
36	68 54	5	68 59	0	69 0	0	68 59	9	68 56	1	68 49	6	68 40	6	24 0
32	67 54	8	67 59	2	68 0	0	67 58	0	67 56	5	67 50	3	67 41	7	28 0
28	66 55	1	66 59	3	67 0	0	66 58	6	66 56	8	66 51	0	66 42	8	32 0
24	65 55	3	65 59	4	66 0	0	65 57	1	65 56	5	65 51	6	65 43	9	36 0
20	64 55	5	64 59	4	65 0	0	64 57	3	64 56	4	64 52	1	64 44	8	40 0
16	63 55	6	63 59	4	64 0	0	63 57	6	63 57	6	63 52	7	63 45	8	44 0
12	62 55	9	62 59	5	63 0	0	62 57	9	62 58	2	62 53	2	62 46	6	48 0
8	61 56	1	61 59	5	62 0	0	61 58	2	61 58	2	61 53	7	61 47	3	52 0
4	60 56	2	60 59	6	61 0	0	60 58	4	60 58	4	60 54	1	60 48	1	56 0
22 0	59 56	3	59 59	6	60 0	0	59 58	6	59 58	6	59 54	6	59 48	8	0 0
21 56	58 56	5	58 59	7	59 0	0	58 58	8	58 58	5	58 55	0	58 49	6	4 0
52	57 56	6	57 59	8	58 0	0	57 59	0	57 55	4	57 50	2	57 43	3	8 0
48	56 56	8	56 59	8	57 0	0	56 59	2	56 55	8	56 50	8	56 44	3	12 0
44	55 56	9	55 59	9	56 0	0	55 59	4	55 56	1	55 51	5	55 45	2	16 0
40	54 57	0	54 59	9	55 0	0	54 59	6	54 56	5	54 52	0	54 46	0	20 0
36	53 57	1	53 59	0	54 0	0	53 59	8	53 56	9	53 52	6	53 46	8	24 0
32	52 57	2	52 59	0	53 0	0	52 57	2	52 53	1	52 47	3	52 40	7	28 0
28	51 57	3	51 59	1	52 0	0	51 57	5	51 53	6	51 48	3	51 41	7	32 0
24	50 57	4	50 59	1	51 0	0	50 57	8	50 54	1	50 49	1	50 42	7	36 0
20	49 57	5	49 59	2	50 0	0	49 58	2	49 54	5	49 49	7	49 43	7	40 0
16	48 57	6	48 59	2	49 0	0	48 58	4	48 55	0	48 50	4	48 44	6	44 0
12	47 57	7	47 59	3	48 0	0	47 58	7	47 55	5	47 51	1	47 45	5	48 0
8	46 57	8	46 59	3	47 0	0	46 59	0	46 56	0	46 51	7	46 46	4	52 0
4	45 57	9	45 59	4	46 0	0	45 59	3	45 56	4	45 52	5	45 47	3	56 0
21 0	44 57	0	44 59	5	45 0	0	44 59	6	44 56	7	44 53	0	44 48	1	0 0
56	43 57	1	43 59	6	44 0	0	43 59	7	43 56	8	43 53	1	43 48	2	4 0
52	42 57	2	42 59	7	43 0	0	42 59	8	42 56	9	42 53	2	42 48	3	8 0
48	41 57	3	41 59	8	42 0	0	41 59	9	41 56	0	41 53	3	41 48	4	12 0
44	40 57	4	40 59	9	41 0	0	40 59	0	40 56	1	40 53	4	40 48	5	16 0
40	39 57	5	39 59	0	40 0	0	39 59	1	39 56	2	39 53	5	39 48	6	20 0
36	38 57	6	38 59	1	39 0	0	38 59	2	38 56	3	38 53	6	38 48	7	24 0
32	37 57	7	37 59	2	38 0	0	37 59	3	37 56	4	37 53	7	37 48	8	28 0
28	36 57	8	36 59	3	37 0	0	36 59	4	36 56	5	36 53	8	36 48	9	32 0
24	35 57	9	35 59	4	36 0	0	35 59	5	35 56	6	35 53	9	35 48	0	36 0
20	34 57	0	34 59	5	35 0	0	34 59	6	34 56	7	34 53	0	34 48	1	40 0
16	33 57	1	33 59	6	34 0	0	33 59	7	33 56	8	33 53	1	33 48	2	44 0
12	32 57	2	32 59	7	33 0	0	32 59	8	32 56	9	32 53	2	32 48	3	48 0
8	31 57	3	31 59	8	32 0	0	31 59	9	31 56	0	31 53	3	31 48	4	52 0
4	30 57	4	30 59	9	31 0	0	30 59	0	30 56	1	30 53	4	30 48	5	56 0
23 0	29 57	5	29 59	0	30 0	0	29 59	1	29 56	2	29 53	5	29 48	6	0 0
22 56	28 57	6	28 59	1	29 0	0	28 59	2	28 56	3	28 53	6	28 48	7	4 0
52	27 57	7	27 59	2	28 0	0	27 59	3	27 56	4	27 53	7	27 48	8	8 0
48	26 57	8	26 59	3	27 0	0	26 59	4	26 56	5	26 53	8	26 48	9	12 0
44	25 57	9	25 59	4	26 0	0	25 59	5	25 56	6	25 53	9	25 48	0	16 0
40	24 57	0	24 59	5	25 0	0	24 59	6	24 56	7	24 53	0	24 48	1	20 0
36	23 57	1	23 59	6	24 0	0	23 59	7	23 56	8	23 53	1	23 48	2	24 0
32	22 57	2	22 59	7	23 0	0	22 59	8	22 56	9	22 53	2	22 48	3	28 0
28	21 57	3	21 59	8	22 0	0	21 59	9	21 56	0	21 53	3	21 48	4	32 0
24	20 57	4	20 59	9	21 0	0	20 59	0	20 56	1	20 53	4	20 48	5	36 0
20	19 57	5	19 59	0	20 0	0	19 59	1	19 56	2	19 53	5	19 48	6	40 0
16	18 57	6	18 59	1	19 0	0	18 59	2	18 56	3	18 53	6	18 48	7	44 0
12	17 57	7	17 59	2	18 0	0	17 59	3	17 56	4	17 53	7	17 48	8	48 0
8	16 57	8	16 59	3	17 0	0	16 59	4	16 56	5	16 53	8	16 48	9	52 0
4	15 57	9	15 59	4	16 0	0	15 59	5	15 56	6	15 53	9	15 48	0	56 0
23 0	14 57	0	14 59	5	15 0	0	14 59	6	14 56	7	14 53	0	14 48	1	0 0
22 56	13 57	1	13 59	6	14 0	0	13 59	7	13 56	8	13 53	1	13 48	2	4 0
52	12 57	2	12 59	7	13 0	0	12 59	8	12 56	9	12 53	2	12 48	3	8 0
48	11 57	3	11 59	8	12 0	0	11 59	9	11 56	0	11 53	3	11 48	4	12 0
44	10 57	4	10 59	9	11 0	0	10 59	0	10 56	1	10 53	4	10 48	5	16 0
40	9 57	5	9 59	0	10 0	0	9 59	1	9 56	2	9 53	5	9 48	6	20 0
36	8 57	6	8 59	1	9 0	0	8 59	2	8 56	3	8 53	6	8 48	7	24 0
32	7 57	7	7 59	2	8 0	0	7 59	3	7 56	4	7 53	7	7 48	8	28 0
28	6 57	8	6 59	3	7 0	0	6 59	4	6 56	5	6 53	8	6 48	9	32 0
24	5 57	9	5 59	4	6 0	0	5 59	5	5 56	6	5 53	9	5 48	0	36 0
20	4 57	0	4 59	5	5 0	0	4 59	6	4 56	7	4 53	0	4 48	1	40 0
16	3 57	1	3 59	6	4 0	0	3 59	7	3 56	8	3 53	1	3 48	2	44 0
12	2 57	2	2 59	7	3 0	0	2 59	8	2 56	9	2 53	2	2 48	3	48 0
8	1 57	3	1 59	8	2 0	0	1 59	9	1 56	0	1 53	3	1 48	4	52 0
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LATITUDE 2°.

Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	79 0.0	78 0.0	77 0.0	76 0.0	75 0.0	74 0.0	73 0.0	72 0.0	71 0.0	70 0.0	69 0.0	68 0.0	0 0
23 56	78 57.4	77 57.4	76 57.7	75 57.9	74 58.1	73 58.2	72 58.1	71 58.4	70 58.4	69 58.6	68 58.6	67 58.7	4
52	78 49.3	77 49.9	76 51.0	75 51.7	74 52.3	73 52.8	72 53.0	71 53.7	70 54.1	69 54.4	68 54.5	67 54.8	8
48	78 36.3	77 38.0	76 39.9	75 41.5	74 42.8	73 43.9	72 44.5	71 45.9	70 46.6	69 47.4	68 47.9	67 48.4	12
44	78 18.6	77 21.9	76 24.9	75 27.4	74 29.6	73 31.6	72 33.1	71 34.8	70 36.2	69 37.6	68 38.6	67 39.7	16
40	77 56.2	77 1.4	76 5.8	75 9.5	74 12.9	73 15.9	72 18.4	71 21.0	70 23.0	69 25.0	68 26.7	67 28.4	20
36	77 29.9	76 37.0	75 43.0	74 48.2	73 53.0	72 57.0	72 0.6	71 4.2	70 7.1	69 9.9	68 12.3	67 14.7	24
32	77 0.0	76 8.8	75 16.7	74 23.6	73 30.0	72 35.2	71 40.0	70 44.7	69 48.8	68 52.4	67 55.6	66 58.7	28
28	76 26.9	75 37.8	74 47.5	73 56.1	73 3.9	72 10.8	71 16.6	70 22.6	69 27.6	68 32.5	67 36.6	66 40.6	32
24	75 50.7	75 8.8	74 15.4	73 25.8	72 35.2	71 43.5	70 51.0	69 58.0	69 4.2	68 10.1	67 15.4	66 20.3	36
20	75 12.2	74 27.2	73 40.8	72 52.9	72 3.9	71 13.8	70 22.7	69 31.3	68 38.6	67 45.6	66 52.0	65 57.9	40
16	74 31.4	73 48.3	73 3.9	72 17.9	71 30.6	70 41.9	69 52.3	69 2.2	68 11.0	67 19.1	66 26.5	65 33.6	44
12	73 48.7	73 7.6	72 24.9	71 40.7	70 55.1	70 8.0	69 19.8	68 31.1	67 41.3	66 50.6	65 59.3	65 7.4	48
8	73 4.4	72 25.0	71 44.2	71 1.6	70 17.7	69 32.2	68 45.6	67 58.2	67 9.6	66 20.4	65 30.2	64 39.5	52
4	72 18.4	71 40.9	71 1.8	70 21.0	69 38.5	68 54.7	68 9.5	67 23.6	66 36.4	65 48.3	64 59.5	64 9.9	0 56
23 0	71 31.4	70 55.5	70 18.1	69 38.9	68 58.0	68 15.5	67 32.0	66 47.4	66 1.5	65 14.8	64 27.0	63 38.8	1 0
22 56	70 43.1	70 8.8	69 32.9	68 55.5	68 15.9	67 34.9	66 52.8	66 9.6	65 25.2	64 39.7	63 53.3	63 6.0	4
52	69 53.9	69 21.1	68 46.7	68 10.6	67 32.6	66 53.2	66 12.3	65 30.6	64 47.3	64 3.6	63 18.0	62 32.0	8
48	69 3.7	68 32.5	67 59.4	67 24.7	66 48.2	66 10.2	65 30.7	64 50.1	64 8.3	63 25.5	62 41.5	61 56.7	12
44	68 12.9	67 42.9	67 11.2	66 37.9	66 2.7	65 26.0	64 47.8	64 8.7	63 28.0	62 46.5	62 3.7	61 20.1	16
40	67 21.2	66 52.5	66 22.3	65 50.2	65 16.3	64 40.8	64 4.0	63 26.1	62 46.8	62 6.3	61 24.8	60 42.3	20
36	66 29.0	66 1.6	65 32.4	65 1.8	64 28.9	63 54.8	63 19.1	62 42.5	62 4.4	61 25.2	60 44.7	60 3.5	24
32	65 36.4	65 9.9	64 42.0	64 12.3	63 40.9	63 7.9	62 33.5	61 58.0	61 21.1	60 42.9	60 3.8	59 23.6	28
28	64 43.1	64 17.9	63 50.8	63 22.5	62 52.1	62 20.4	61 47.0	61 12.7	60 36.9	60 0.0	59 22.0	58 42.9	32
24	63 49.4	63 25.1	62 59.4	62 31.9	62 2.6	61 32.0	60 59.9	60 26.6	59 51.9	59 16.2	58 39.2	58 1.2	36
20	62 55.3	62 32.0	62 7.3	61 40.9	61 12.6	60 43.0	60 11.9	59 39.9	59 6.3	58 31.5	57 55.6	57 18.8	40
16	62 1.0	61 38.4	61 14.6	60 49.3	60 22.1	59 53.3	59 23.4	58 52.4	58 19.8	57 46.2	57 11.3	56 35.5	44
12	61 6.3	60 44.7	60 21.6	59 57.2	59 31.0	59 3.3	58 34.3	58 4.2	57 32.7	57 0.3	56 26.4	55 51.5	48
8	60 11.2	59 50.5	59 28.3	59 4.6	58 39.4	58 12.8	57 44.7	57 15.6	56 45.1	56 13.5	55 40.7	55 7.0	52
4	59 15.8	58 56.0	58 34.6	58 11.9	57 47.4	57 21.6	56 54.6	56 26.5	55 56.9	55 26.2	54 54.5	54 21.6	1 56
22 0	58 20.3	58 1.1	57 40.6	57 18.7	56 55.1	56 30.1	56 4.0	55 36.8	55 8.2	54 38.5	54 7.6	53 35.8	2 0
21 56	57 24.6	57 6.1	56 46.2	56 25.1	56 2.4	55 38.4	55 13.0	54 46.6	54 19.0	53 50.2	53 20.3	52 49.3	4
52	56 28.7	56 10.8	55 51.7	55 31.3	55 9.4	54 46.2	54 21.6	53 56.2	53 29.3	53 1.5	52 32.4	52 2.4	8
48	55 32.5	55 15.3	54 56.9	54 37.2	54 16.0	53 53.6	53 30.0	53 5.2	52 39.3	52 12.2	51 44.1	51 15.0	12
44	54 36.1	54 19.6	54 1.9	53 42.9	53 22.3	53 0.7	52 37.8	52 14.0	51 48.8	51 22.6	50 55.3	50 27.1	16
40	53 39.6	53 23.7	53 6.6	52 48.3	52 28.6	52 7.5	51 45.4	51 22.3	50 58.1	50 32.6	50 6.1	49 38.7	20
36	52 43.1	52 27.7	52 11.1	51 53.5	51 34.4	51 14.2	50 52.7	50 30.4	50 6.8	49 42.3	49 16.6	48 50.0	24
32	51 46.3	51 31.4	51 15.6	50 58.5	50 40.1	50 20.5	49 59.8	49 38.2	49 15.3	48 51.6	48 26.8	48 1.0	28
28	50 49.3	50 35.2	50 19.8	50 3.3	49 45.5	49 26.6	49 6.6	48 45.7	48 23.6	48 0.5	47 36.5	47 11.5	32
24	49 52.4	49 38.6	49 23.9	49 8.0	48 50.8	48 32.5	48 13.2	47 53.0	47 31.6	47 9.3	46 45.8	46 21.6	36
20	48 55.2	48 42.1	48 27.9	48 12.5	47 55.9	47 38.2	47 19.5	47 0.0	46 39.3	46 17.7	45 55.0	45 31.5	40
16	47 58.1	47 45.3	47 31.6	47 16.8	47 0.8	46 43.7	46 25.6	46 6.8	45 46.7	45 25.8	45 3.9	44 41.2	44
12	47 0.7	46 48.5	46 35.2	46 21.0	46 5.5	45 49.1	45 31.6	45 13.3	44 53.9	44 33.7	44 12.5	43 50.5	48
8	46 3.4	45 51.5	45 38.8	45 25.0	45 10.1	44 54.3	44 37.3	44 19.7	44 1.0	43 41.4	43 20.8	42 59.5	52
4	45 5.9	44 54.5	44 42.2	44 29.0	44 14.6	43 59.3	43 42.9	43 25.9	43 7.8	42 48.8	42 29.0	42 8.3	2 56
21 0	44 8.4	43 57.4	43 45.6	43 32.8	43 18.9	43 4.1	42 48.4	42 31.9	42 14.4	41 56.1	41 36.9	41 16.9	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 2°.

Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°			
m.	°	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
1 56 52 48 44	0	44 57.9	45 0.4	45 1.8	45 2.1	45 1.4	44 59.6	44 56.7	44 53.0	44 48.1	44 42.2	44 35.2	44 27.4	44 18.4		3	0
	56	43 58.0	44 0.4	44 1.8	44 2.2	44 1.5	43 59.8	43 57.2	43 53.6	43 48.9	43 43.2	43 36.6	43 29.0	43 20.4			4
	52	42 58.0	43 0.4	43 1.8	43 2.3	43 1.6	43 0.1	42 57.6	42 54.2	42 49.7	42 44.3	42 37.9	42 30.6	42 22.4			8
	48	41 58.1	42 0.5	42 1.9	42 2.3	42 1.8	42 0.4	41 58.1	41 54.7	41 50.5	41 45.3	41 39.1	41 32.2	41 24.3			12
	44	40 58.1	41 0.5	41 1.9	41 2.5	41 2.0	41 0.6	40 58.4	40 55.3	40 51.3	40 46.3	40 40.4	40 33.8	40 26.2			16
40 36 32 28 24	0	39 58.2	40 0.5	40 2.0	40 2.5	40 2.2	40 0.9	39 58.8	39 55.8	39 52.0	39 47.2	39 41.7	39 35.3	39 28.0			20
	36	38 58.3	39 0.6	39 2.0	39 2.6	39 2.2	39 1.1	38 59.2	38 56.4	38 52.7	38 48.2	38 42.9	38 36.7	38 29.8			24
	32	37 58.3	38 0.6	38 2.1	38 2.7	38 2.4	38 1.3	37 59.6	37 56.9	37 53.5	37 49.2	37 44.0	37 38.2	37 31.5			28
	28	36 58.4	37 0.7	37 2.1	37 2.8	37 2.6	37 1.6	36 59.9	36 57.4	36 54.2	36 50.0	36 45.1	36 39.6	36 33.2			32
	24	35 58.4	36 0.7	36 2.2	36 2.8	36 2.7	36 1.8	35 59.3	35 57.9	35 54.8	35 50.9	35 46.3	35 41.0	35 34.9			36
20 16 12 8 4	0	34 58.5	35 0.8	35 2.2	35 3.0	35 2.9	35 2.1	35 0.6	34 58.4	34 55.5	34 51.8	34 47.4	34 42.3	34 36.5			40
	16	33 58.6	34 0.8	34 2.3	34 3.0	34 3.1	34 2.3	34 1.0	33 58.9	33 56.2	33 52.7	33 48.5	33 43.7	33 38.1			44
	12	32 58.7	33 0.8	33 2.3	33 3.1	33 3.2	33 2.6	33 1.3	32 59.4	32 56.8	32 53.5	32 49.5	32 45.0	32 39.7			48
	8	31 58.7	32 0.8	32 2.4	32 3.2	32 3.3	32 2.8	32 1.7	31 59.9	31 57.5	31 54.3	31 50.6	31 46.3	31 41.3			52
	4	30 58.7	31 0.9	31 2.4	31 3.3	31 3.4	31 3.1	31 2.0	30 58.1	30 55.2	30 51.6	30 47.6	30 42.8			3	56
J0 9 56 52 48 44	0	29 58.8	30 0.9	30 2.4	30 3.3	30 3.6	30 3.3	30 2.4	29 58.8	29 56.0	29 52.7	29 48.8	29 44.3			4	0
	56	28 58.8	29 0.9	29 2.4	29 3.5	29 3.7	29 3.5	29 2.7	28 59.4	28 56.8	28 53.6	28 50.1	28 45.8				4
	52	27 58.8	28 1.0	28 2.5	28 3.5	28 3.9	28 3.7	28 3.1	28 1.8	28 0.0	27 57.6	27 54.7	27 51.2	27 47.3			8
	48	26 58.9	27 1.0	27 2.6	27 3.6	27 4.0	27 4.0	27 3.4	27 2.3	27 0.6	26 58.4	26 55.6	26 52.5	26 48.7			12
	44	25 58.9	26 1.0	26 2.6	26 3.7	26 4.2	26 4.2	26 3.7	26 2.7	26 1.3	25 59.2	25 56.7	25 53.7	25 50.2			16
40 36 32 28 24	0	24 59.0	25 1.1	25 2.6	25 3.8	25 4.3	25 4.4	25 4.0	25 3.2	25 1.8	25 0.0	24 57.6	24 54.9	24 51.6			20
	36	23 59.0	24 1.1	24 2.7	24 3.8	24 4.5	24 4.6	24 4.4	24 3.6	24 2.5	24 0.7	23 58.6	23 56.0	23 53.0			24
	32	22 59.1	23 1.2	23 2.8	23 3.9	23 4.6	23 4.9	23 4.7	23 4.1	23 3.1	23 1.5	22 59.5	22 57.2	22 54.4			28
	28	21 59.1	22 1.2	22 2.8	22 4.0	22 4.8	22 5.1	22 5.0	22 4.6	22 3.7	22 2.2	22 0.5	21 58.4	21 55.8			32
	24	20 59.2	21 1.2	21 2.9	21 4.1	21 4.9	21 5.3	21 5.3	21 5.0	21 4.2	21 3.0	21 1.4	20 59.5	20 57.1			36
20 16 12 8 4	0	19 59.2	20 1.2	20 2.9	20 4.2	20 5.0	20 5.6	20 5.7	20 5.4	20 4.8	20 3.8	20 2.4	20 0.7	19 58.5			40
	16	18 59.2	19 1.3	19 3.0	19 4.3	19 5.2	19 5.8	19 6.0	19 5.9	19 5.4	19 4.5	19 3.3	19 1.8	18 59.9			44
	12	17 59.3	18 1.3	18 3.0	18 4.4	18 5.4	18 6.0	18 6.3	18 6.4	18 6.0	18 5.2	18 4.2	18 2.9	18 1.2			48
	8	16 59.3	17 1.4	17 3.1	17 4.5	17 5.5	17 6.3	17 6.7	17 6.8	17 6.6	17 6.0	17 5.1	17 4.0	17 2.5			52
	4	15 59.3	16 1.4	16 3.2	16 4.6	16 5.6	16 6.5	16 7.0	16 7.2	16 7.2	16 6.8	16 6.1	16 5.1	16 3.8		4	56
9 8 56 52 48 44	0	14 59.4	15 1.5	15 3.2	15 4.7	15 5.8	15 6.7	15 7.3	15 7.7	15 7.8	15 7.5	15 7.0	15 6.2	15 5.2		5	0
	56	13 59.4	14 1.5	14 3.3	14 4.8	14 6.0	14 6.9	14 7.6	14 8.1	14 8.4	14 8.2	14 7.9	14 7.4	14 6.5			4
	52	12 59.4	13 1.5	13 3.3	13 4.8	13 6.1	13 7.2	13 8.0	13 8.6	13 8.9	13 9.0	13 8.8	13 8.5	13 7.8			8
	48	11 59.5	12 1.6	12 3.4	12 5.0	12 6.3	12 7.4	12 8.4	12 9.0	12 9.5	12 9.7	12 9.7	12 9.6	12 9.1			12
	44	10 59.5	11 1.6	11 3.4	11 5.1	11 6.5	11 7.6	11 8.6	11 9.5	11 10.1	11 10.5	11 10.6	11 10.7	11 10.4			16
40 36 32 28 24	0	9 59.6	10 1.7	10 3.5	10 5.2	10 6.6	10 7.9	10 9.0	10 9.9	10 10.7	10 11.2	10 11.5	10 11.8	10 11.8			20
	36	8 59.6	9 1.7	9 3.6	9 5.3	9 6.8	9 8.1	9 9.4	9 10.4	9 11.3	9 12.0	9 12.4	9 12.9	9 13.1			24
	32	7 59.6	8 1.8	8 3.6	8 5.4	8 6.9	8 8.4	8 9.7	8 10.9	8 11.9	8 12.7	8 13.4	8 14.0	8 14.4			28
	28	6 59.7	7 1.8	7 3.7	7 5.5	7 7.1	7 8.6	7 10.0	7 11.3	7 12.5	7 13.4	7 14.3	7 15.1	7 15.7			32
	24	5 59.7	6 1.8	6 3.7	6 5.6	6 7.3	6 8.9	6 10.4	6 11.8	6 13.1	6 14.2	6 15.2	6 16.2	6 17.0			36
20 16 12 8 4	0	4 59.8	5 1.8	5 3.8	5 5.7	5 7.5	5 9.1	5 10.8	5 12.2	5 13.6	5 15.0	5 16.1	5 17.3	5 18.3			40
	16	3 59.8	4 1.9	4 3.9	4 5.8	4 7.7	4 9.4	4 11.1	4 12.7	4 14.3	4 15.7	4 17.1	4 18.4	4 19.7			44
	12	2 59.9	3 1.9	3 4.0	3 5.9	3 7.8	3 9.6	3 11.5	3 13.2	3 14.9	3 16.4	3 18.0	3 19.6	3 21.0			48
	8	1 59.9	2 2.0	2 4.0	2 6.1	2 8.0	2 9.9	2 11.8	2 13.7	2 15.5	2 17.2	2 18.9	2 20.7	2 22.3			52
	4	1 0.0	1 2.1	1 4.1	1 6.1	1 8.2	1 10.2	1 12.2	1 14.1	1 16.1	1 18.0	1 19.9	1 21.8	1 23.6		5	56
8	0	0 0.0	0 2.1	0 4.2	0 6.3	0 8.4	0 10.4	0 12.6	0 14.6	0 16.7	0 18.8	0 20.8	0 22.9	0 24.9		6	0

LATITUDE 2°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
21 0	44 8.4	43 57.4	43 45.6	43 32.8	43 18.9	43 4.1	42 48.4	42 31.9	42 14.4	41 56.1	41 36.9	41 16.9	3 0		
20 56	43 10.8	43 0.3	42 48.8	42 36.5	42 23.1	42 8.8	41 53.6	41 37.8	41 20.8	41 3.2	40 44.6	40 25.2	4		
52	42 13.1	42 3.0	41 52.0	41 40.1	41 27.2	41 13.4	40 58.8	40 43.4	40 27.1	40 10.0	39 52.1	39 33.4	8		
48	41 15.4	41 5.6	40 55.0	40 43.7	40 31.2	40 17.9	40 3.8	39 49.0	39 33.2	39 16.8	38 59.4	38 41.4	12		
44	40 17.6	40 8.2	39 58.0	39 47.1	39 35.1	39 22.3	39 8.7	38 54.4	38 39.2	38 23.3	38 6.5	37 49.1	16		
40	39 19.8	39 10.7	39 1.0	38 50.4	38 38.9	38 26.6	38 13.4	37 59.7	37 45.0	37 29.7	37 13.5	36 56.7	20		
36	38 21.9	38 13.2	38 3.8	37 53.7	37 42.6	37 30.8	37 18.1	37 4.8	36 50.8	36 35.9	36 20.3	36 4.1	24		
32	37 24.0	37 15.6	37 6.6	36 56.9	36 46.2	36 34.8	36 22.8	36 10.0	35 56.3	35 42.0	35 27.0	35 11.4	28		
28	36 26.0	36 18.0	36 9.3	36 0.0	35 49.7	35 38.8	35 27.1	35 14.9	35 1.8	34 48.0	34 33.6	34 18.4	32		
24	35 28.0	35 20.3	35 12.0	35 3.0	34 53.3	34 42.8	34 31.5	34 19.7	34 7.1	33 53.9	33 39.9	33 25.4	36		
20	34 29.9	34 22.6	34 14.7	34 6.1	33 56.7	33 46.6	33 35.8	33 24.5	33 12.4	32 59.7	32 46.3	32 32.2	40		
16	33 31.8	33 24.8	33 17.3	33 9.1	33 0.3	32 50.3	32 40.0	32 29.1	32 17.5	32 5.3	31 52.4	31 39.0	44		
12	32 33.7	32 27.0	32 19.8	32 11.9	32 3.3	31 54.1	31 44.1	31 33.7	31 22.6	31 10.9	30 58.4	30 45.5	48		
8	31 35.5	31 29.2	31 22.3	31 14.8	31 6.5	30 57.7	30 48.2	30 38.2	30 27.6	30 16.3	30 4.4	29 52.0	52		
4	30 37.4	30 31.3	30 24.7	30 17.6	30 9.7	30 1.2	29 52.1	29 42.7	29 32.4	29 21.7	29 10.3	28 58.4	3 56		
20 0	29 39.1	29 33.4	29 27.1	29 20.4	29 12.8	29 4.8	28 56.1	28 47.0	28 37.2	28 26.9	28 16.1	28 4.7	4 0		
19 56	28 40.9	28 35.4	28 29.5	28 23.0	28 15.9	28 8.3	28 0.0	27 51.3	27 42.0	27 32.2	27 21.7	27 10.9	4		
52	27 42.7	27 37.5	27 31.8	27 25.7	27 19.0	27 11.6	27 3.8	26 55.5	26 46.7	26 37.3	26 27.4	26 16.9	8		
48	26 44.4	26 39.5	26 34.2	26 28.4	26 21.9	26 15.0	26 7.5	25 59.7	25 51.2	25 42.4	25 32.9	25 23.0	12		
44	25 46.0	25 41.5	25 36.5	25 31.0	25 24.9	25 18.3	25 11.2	25 3.8	24 55.8	24 47.3	24 38.3	24 28.9	16		
40	24 47.8	24 43.4	24 38.7	24 33.6	24 27.8	24 21.6	24 14.9	24 7.9	24 0.2	23 52.3	23 43.7	23 34.8	20		
36	23 49.4	23 45.4	23 40.9	23 36.1	23 30.7	23 24.8	23 18.5	23 11.9	23 4.7	22 57.1	22 49.1	22 40.6	24		
32	22 51.1	22 47.3	22 43.2	22 38.7	22 33.6	22 28.1	22 22.1	22 15.9	22 9.1	22 1.9	21 54.3	21 46.3	28		
28	21 52.7	21 49.2	21 45.3	21 41.2	21 36.4	21 31.2	21 25.6	21 19.8	21 13.4	21 6.7	20 59.6	20 52.0	32		
24	20 54.3	20 51.1	20 47.5	20 43.6	20 39.2	20 34.3	20 29.2	20 23.7	20 17.7	20 11.4	20 4.7	19 57.6	36		
20	19 55.9	19 52.9	19 49.7	19 46.1	19 41.9	19 37.5	19 32.6	19 27.6	19 22.0	19 16.1	19 9.8	19 3.2	40		
16	18 57.5	18 54.8	18 51.8	18 48.5	18 44.7	18 40.6	18 36.1	18 31.4	18 26.2	18 20.7	18 14.9	18 8.7	44		
12	17 59.1	17 56.6	17 53.9	17 50.9	17 47.5	17 43.7	17 39.5	17 35.2	17 30.4	17 25.4	17 19.9	17 14.2	48		
8	17 0.6	16 58.5	16 56.0	16 53.3	16 50.2	16 46.7	16 42.9	16 38.9	16 34.6	16 29.9	16 24.9	16 19.6	52		
4	16 2.2	16 0.3	15 58.1	15 55.7	15 52.9	15 49.8	15 46.3	15 42.7	15 38.7	15 34.5	15 29.8	15 25.0	4 56		
19 0	15 3.8	15 2.1	15 0.2	14 58.1	14 55.6	14 52.8	14 49.7	14 46.4	14 42.8	14 38.9	14 34.8	14 30.3	5 0		
18 56	14 5.3	14 3.9	14 2.3	14 0.5	13 58.2	13 55.8	13 53.0	13 50.1	13 46.9	13 43.5	13 39.7	13 35.7	4		
52	13 6.9	13 5.7	13 4.3	13 2.7	13 0.9	12 58.7	12 56.3	12 53.8	12 51.0	12 47.9	12 44.6	12 41.0	8		
48	12 8.4	12 7.5	12 6.4	12 5.2	12 3.5	12 1.7	11 59.6	11 57.5	11 55.0	11 52.4	11 49.4	11 46.3	12		
44	11 10.0	11 9.3	11 8.5	11 7.5	11 6.2	11 4.7	11 2.9	11 1.1	10 59.0	10 56.7	10 54.2	10 51.5	16		
40	10 11.5	10 11.1	10 10.5	10 9.8	10 8.8	10 7.6	10 6.2	10 4.8	10 3.0	10 1.2	9 59.0	9 56.8	20		
36	9 13.1	9 12.8	9 12.6	9 12.1	9 11.4	9 10.5	9 9.5	9 8.4	9 7.1	9 5.6	9 3.8	9 2.0	24		
32	8 14.6	8 14.7	8 14.6	8 14.5	8 14.1	8 13.5	8 12.7	8 12.0	8 11.1	8 9.9	8 8.6	8 7.2	28		
28	7 16.1	7 16.4	7 16.7	7 16.8	7 16.7	7 16.4	7 16.0	7 15.7	7 15.0	7 14.3	7 13.4	7 12.4	32		
24	6 17.6	6 18.2	6 18.7	6 19.1	6 19.3	6 19.4	6 19.3	6 19.3	6 19.0	6 18.7	6 18.2	6 17.6	36		
20	5 19.2	5 20.0	5 20.7	5 21.4	5 21.9	5 22.3	5 22.6	5 22.9	5 23.0	5 23.0	5 22.9	5 22.8	40		
16	4 20.7	4 21.8	4 22.8	4 23.8	4 24.6	4 25.2	4 25.8	4 26.5	4 27.0	4 27.4	4 27.7	4 28.0	44		
12	3 22.3	3 23.5	3 24.9	3 26.1	3 27.1	3 28.2	3 29.1	3 30.1	3 30.9	3 31.8	3 32.5	3 33.1	48		
8	2 23.8	2 25.3	2 26.9	2 28.5	2 29.8	2 31.1	2 32.4	2 33.8	2 35.0	2 36.2	2 37.3	2 38.3	52		
4	1 25.4	1 27.2	1 28.9	1 30.8	1 32.6	1 34.1	1 35.7	1 37.4	1 39.0	1 40.6	1 42.0	1 43.6	5 56		
18 0	0 27.0	0 29.1	0 31.0	0 33.1	0 35.1	0 37.1	0 39.0	0 41.0	0 43.0	0 44.9	0 46.8	0 48.8	6 0		

LATITUDE 2°.														
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.
24 0	88 0 0	87 0 0	86 0 0	85 0 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	0 0
23 56	87 45 7	86 50 2	85 52 6	84 54 1	83 55 1	82 55 7	81 56 2	80 56 7	79 57 0	78 57 2	77 57 6	76 57 9	75 57 9	4
52	87 10 2	86 23 7	85 31 7	84 36 9	83 40 6	82 43 2	81 45 2	80 46 9	79 48 2	78 49 0	77 50 2	76 51 0	75 51 6	8
48	86 23 7	85 45 5	85 0 0	84 10 2	83 17 6	82 23 1	81 27 5	80 31 0	79 33 7	78 35 8	77 37 9	76 39 4	75 41 2	12
44	85 31 7	85 0 0	84 20 6	83 36 0	82 47 5	81 56 3	81 3 6	80 9 3	79 14 0	78 18 0	77 21 4	76 24 3	75 26 9	16
40	84 36 8	84 10 2	83 35 9	82 55 8	82 11 6	81 23 9	80 34 3	79 42 6	78 49 5	77 55 4	77 0 5	76 4 9	75 8 9	20
36	83 40 5	83 17 6	82 47 4	82 11 5	81 31 3	80 46 9	80 0 5	79 11 5	78 20 8	77 28 6	76 35 7	75 41 9	74 47 3	24
32	82 43 2	82 23 1	81 56 3	81 24 0	80 47 1	80 6 1	79 22 6	78 36 7	77 48 4	76 58 2	76 7 2	75 15 3	74 22 4	28
28	81 45 3	81 27 4	81 3 4	80 34 1	80 0 5	79 22 4	78 41 7	77 58 2	77 12 5	76 24 7	75 35 7	74 45 7	73 54 3	32
24	80 46 8	80 30 9	80 9 2	79 42 3	79 11 3	78 36 3	77 58 1	77 17 0	76 33 8	75 48 3	75 1 4	74 13 0	73 23 5	36
20	79 48 2	79 33 7	79 13 9	78 49 4	78 20 7	77 48 1	77 12 2	76 33 7	75 52 7	75 9 4	74 24 3	73 38 0	72 50 1	40
16	78 49 3	78 36 0	78 17 8	77 55 3	77 28 6	76 58 2	76 24 7	75 48 3	75 9 5	74 28 1	73 45 1	73 0 6	72 14 6	44
12	77 50 2	77 37 9	77 21 2	77 0 3	76 35 4	76 7 1	75 35 5	75 1 1	74 24 4	73 45 0	73 3 8	72 21 3	71 36 9	48
8	76 51 0	76 39 6	76 24 1	76 4 5	75 41 4	75 14 7	74 45 1	74 12 6	73 37 6	73 0 2	72 20 9	71 40 0	70 57 1	52
4	75 51 6	75 41 1	75 26 6	75 8 2	74 46 6	74 21 7	73 53 5	73 22 9	72 49 6	72 14 0	71 36 4	70 57 1	70 15 8	0 56
23 0	74 52 2	74 42 3	74 28 7	74 11 5	73 51 2	73 27 6	73 1 2	72 32 0	72 0 5	71 26 4	70 50 4	70 12 8	69 33 2	1 0
22 56	73 52 7	73 43 4	73 30 6	73 14 6	72 55 3	72 32 9	72 8 0	71 40 4	71 10 2	70 37 6	70 3 3	69 27 1	68 49 2	4
52	72 53 2	72 44 3	72 32 3	72 17 2	71 58 9	71 37 7	71 14 0	70 47 8	70 19 1	69 48 0	69 14 9	68 40 4	68 3 8	8
48	71 53 5	71 45 3	71 33 9	71 19 5	71 2 2	70 42 2	70 19 5	69 54 5	69 27 2	68 57 4	68 25 8	67 52 5	67 17 4	12
44	70 54 0	70 46 1	70 35 2	70 21 5	70 5 2	69 46 2	69 24 6	69 0 7	68 34 5	68 6 1	67 35 8	67 3 7	66 29 9	16
40	69 54 2	69 46 8	69 36 5	69 23 5	69 7 8	68 49 7	68 29 3	68 6 3	67 41 3	67 14 0	66 45 0	66 14 2	65 41 6	20
36	68 54 5	68 47 4	68 37 7	68 25 3	68 10 3	67 52 9	67 33 4	67 11 6	66 47 5	66 21 3	65 53 4	65 23 9	64 52 6	24
32	67 54 8	67 48 1	67 38 7	67 26 9	67 12 6	66 55 9	66 37 2	66 16 3	65 53 4	65 28 2	65 1 3	64 32 8	64 2 6	28
28	66 55 1	66 48 6	66 39 6	66 28 3	66 14 6	65 58 8	65 40 7	65 20 7	64 58 6	64 34 6	64 8 7	63 41 2	63 12 1	32
24	65 55 3	65 49 1	65 40 5	65 29 6	65 16 5	65 1 3	64 44 1	64 24 8	64 3 6	63 40 4	63 15 5	62 49 2	62 20 9	36
20	64 55 5	64 49 6	64 41 3	64 30 8	64 18 2	64 3 7	63 47 2	63 28 6	63 8 2	62 45 8	62 22 0	61 56 5	61 29 3	40
16	63 55 6	63 49 9	63 42 0	63 32 0	63 19 9	63 5 9	62 50 0	62 32 2	62 12 5	61 51 0	61 27 9	61 3 4	60 37 2	44
12	62 55 9	62 50 4	62 42 6	62 33 1	62 21 4	62 7 9	61 52 6	61 35 4	61 16 7	60 55 8	60 33 6	60 9 8	59 44 6	48
8	61 56 1	61 50 6	61 43 3	61 34 0	61 22 9	61 9 9	60 55 0	60 38 6	60 20 4	60 0 4	59 38 8	59 16 0	58 51 4	52
4	60 56 2	60 51 0	60 43 9	60 35 0	60 24 2	60 11 6	59 57 4	59 41 5	59 24 0	59 4 6	58 48 9	58 21 7	57 57 9	1 56
22 0	59 56 3	59 51 3	59 44 4	59 35 8	59 25 4	59 13 3	58 59 6	58 44 3	58 27 2	58 8 7	57 48 6	57 27 2	57 4 3	2 0
21 56	58 56 5	58 51 6	58 44 9	58 36 6	58 26 6	58 14 9	58 1 7	57 46 8	57 30 5	57 12 4	56 53 1	56 32 3	56 10 2	4
52	57 56 6	57 51 9	57 45 4	57 37 4	57 27 7	57 16 4	57 3 6	56 49 3	56 33 5	56 16 0	55 57 2	55 37 3	55 15 7	8
48	56 56 8	56 52 1	56 45 9	56 38 1	56 28 7	56 17 8	56 5 5	55 51 6	55 36 3	55 19 4	55 1 3	54 41 8	54 21 1	12
44	55 56 9	55 52 4	55 46 3	55 38 8	55 29 7	55 19 1	55 7 2	54 53 8	54 39 0	54 22 6	54 5 1	53 46 3	53 26 1	16
40	54 57 0	54 52 6	54 46 8	54 39 4	54 30 6	54 20 4	54 8 8	53 55 9	53 41 5	53 25 7	53 8 7	52 50 5	52 31 0	20
36	53 57 1	53 52 9	53 47 1	53 40 0	53 31 5	53 21 6	53 10 4	52 57 8	52 43 9	52 28 6	52 12 1	51 54 5	51 35 6	24
32	52 57 2	52 53 0	52 47 5	52 40 5	52 32 4	52 22 8	52 11 9	51 59 6	51 46 2	51 31 4	51 15 4	50 58 3	50 40 0	28
28	51 57 3	51 53 3	51 47 9	51 41 2	51 33 2	51 23 8	51 13 3	51 1 4	50 48 4	50 34 0	50 18 5	50 2 0	49 44 2	32
24	50 57 4	50 53 4	50 48 2	50 41 7	50 33 9	50 24 8	50 14 6	50 3 2	49 50 5	49 36 5	49 21 5	49 5 5	48 48 2	36
20	49 57 5	49 53 7	49 48 5	49 42 2	49 34 5	49 25 8	49 15 9	49 4 8	48 52 5	48 39 0	48 24 4	48 8 8	47 52 0	40
16	48 57 6	48 53 8	48 48 9	48 42 6	48 35 3	48 26 8	48 17 1	48 6 3	47 54 4	47 41 3	47 27 1	47 12 1	46 55 8	44
12	47 57 7	47 54 0	47 49 1	47 43 1	47 35 9	47 27 7	47 18 3	47 7 9	46 56 3	46 43 5	46 29 9	46 15 1	45 59 3	48
8	46 57 7	46 54 1	46 49 4	46 43 5	46 36 6	46 28 5	46 19 5	46 9 3	45 58 0	45 45 7	45 32 4	45 18 2	45 2 8	52
4	45 57 8	45 54 3	45 49 7	45 44 0	45 37 2	45 29 4	45 20 5	45 10 6	44 59 8	44 47 7	44 34 8	44 21 0	44 6 2	2 56
21 0	44 57 9	44 54 4	44 49 9	44 44 4	44 37 8	44 30 1	44 21 5	44 12 0	44 1 4	43 49 7	43 37 2	43 23 8	43 9 4	3 0

LATITUDE 2°.																
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.		
Declination														Declination		
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.
15 0	21 0	44 57.9	44 54.4	44 49.9	44 44.4	44 37.8	44 30.1	44 21.5	44 12.0	44 1.4	43 49.7	43 37.2	43 23.8	43 9.4	3 0	9 0
4	20 56	43 58.0	43 54.6	43 50.1	43 44.7	43 38.4	43 30.9	43 22.6	43 13.2	43 3.0	42 51.6	42 39.5	42 26.4	42 12.5	4 8 56	
8	52	42 58.0	42 54.7	42 50.4	42 45.1	42 38.9	42 31.7	42 23.5	42 14.5	42 4.5	41 53.5	41 41.7	41 29.0	41 15.5	8 52	
12	48	41 58.1	41 54.8	41 50.6	41 45.4	41 39.4	41 32.3	41 24.5	41 15.6	41 6.0	40 55.3	40 43.8	40 31.5	40 18.4	12 48	
16	44	40 58.1	40 54.9	40 50.8	40 45.8	40 39.8	40 33.0	40 25.3	40 16.8	40 7.4	39 57.0	39 45.9	39 33.9	39 21.2	16 44	
20	40	39 58.2	39 55.1	39 51.0	39 46.1	39 40.3	39 33.7	39 26.2	39 17.9	39 8.8	38 58.7	38 47.9	38 36.3	38 23.8	20 40	
24	36	38 58.3	38 55.2	38 51.2	38 46.4	38 40.8	38 34.3	38 27.0	38 19.0	38 10.1	38 0.3	37 49.8	37 38.5	37 26.5	24 36	
28	32	37 58.3	37 55.3	37 51.4	37 46.7	37 41.2	37 34.9	37 27.9	37 20.0	37 11.4	37 1.9	36 51.6	36 40.7	36 29.0	28 32	
32	28	36 58.4	36 55.4	36 51.5	36 47.0	36 41.6	36 35.5	36 28.6	36 21.0	36 12.6	36 3.3	35 53.4	35 42.9	35 31.6	32 28	
36	24	35 58.4	35 55.5	35 51.8	35 47.3	35 42.1	35 36.1	35 29.4	35 22.0	35 13.8	35 4.8	34 55.2	34 45.0	34 33.9	36 24	
40	20	34 58.5	34 55.6	34 51.9	34 47.6	34 42.4	34 36.7	34 30.1	34 22.9	34 14.9	34 6.3	33 56.9	33 46.9	33 36.3	40 20	
44	16	33 58.6	33 55.7	33 52.2	33 47.8	33 42.9	33 37.1	33 30.8	33 23.8	33 16.1	33 7.6	32 58.6	32 48.9	32 38.6	44 16	
48	12	32 58.7	32 55.8	32 52.3	32 48.1	32 43.2	32 37.7	32 31.5	32 24.7	32 17.2	32 9.0	32 0.2	31 50.8	31 40.8	48 12	
52	8	31 58.7	31 55.9	31 52.5	31 48.4	31 43.6	31 38.2	31 32.3	31 25.5	31 18.3	31 10.3	31 1.8	30 52.7	30 42.9	52 8	
15 56	4	30 58.7	30 56.0	30 52.6	30 48.6	30 43.9	30 38.7	30 32.9	30 26.4	30 19.3	30 11.6	30 3.3	29 54.5	29 45.1	3 56	4
16 0	20 0	29 58.8	29 56.1	29 52.7	29 48.8	29 44.3	29 39.2	29 33.5	29 27.2	29 20.4	29 12.8	29 4.8	28 56.2	28 47.2	4 0	8 0
4	19 56	28 58.8	28 56.2	28 52.9	28 49.0	28 44.6	28 39.6	28 34.1	28 28.1	28 21.3	28 14.1	28 6.2	27 58.0	27 49.1	4 7 56	
8	52	27 58.8	27 56.2	27 53.0	27 49.2	27 45.0	27 40.1	27 34.7	27 28.8	27 22.3	27 15.2	27 7.8	26 59.8	26 51.1	8 52	
12	48	26 58.9	26 56.3	26 53.2	26 49.5	26 45.2	26 40.5	26 35.3	26 29.6	26 23.3	26 16.5	26 9.1	26 1.4	25 53.0	12 48	
16	44	25 58.9	25 56.4	25 53.3	25 49.7	25 45.6	25 40.9	25 35.9	25 30.3	25 24.2	25 17.5	25 10.5	25 3.0	24 55.0	16 44	
20	40	24 59.0	24 56.4	24 53.4	24 49.9	24 45.9	24 41.4	24 36.4	24 31.0	24 25.1	24 18.6	24 11.8	24 4.6	23 56.8	20 40	
24	36	23 59.0	23 56.5	23 53.5	23 50.0	23 46.1	23 41.8	23 37.0	23 31.7	23 26.0	23 19.7	23 13.2	23 6.1	22 58.6	24 36	
28	32	22 59.1	22 56.6	22 53.6	22 50.3	22 46.4	22 42.2	22 37.5	22 32.4	22 26.9	22 20.9	22 14.4	22 7.6	22 0.4	28 32	
32	28	21 59.1	21 56.6	21 53.7	21 50.5	21 46.7	21 42.5	21 38.0	21 33.1	21 27.7	21 21.8	21 15.7	21 9.1	21 2.2	32 28	
36	24	20 59.2	20 56.7	20 53.9	20 50.7	20 47.0	20 42.9	20 38.5	20 33.8	20 28.5	20 22.9	20 16.9	20 10.6	20 3.9	36 24	
40	20	19 59.2	19 56.8	19 54.0	19 50.8	19 47.2	19 43.3	19 39.1	19 34.4	19 29.4	19 23.9	19 18.1	19 12.1	19 5.6	40 20	
44	16	18 59.2	18 56.9	18 54.1	18 51.0	18 47.5	18 43.7	18 39.5	18 35.0	18 30.2	18 24.9	18 19.3	18 13.5	18 7.2	44 16	
48	12	17 59.3	17 56.9	17 54.2	17 51.2	17 47.8	17 44.0	17 40.0	17 35.7	17 31.0	17 25.8	17 20.5	17 14.9	17 8.9	48 12	
52	8	16 59.3	16 57.0	16 54.3	16 51.3	16 48.0	16 44.4	16 40.5	16 36.3	16 31.7	16 26.8	16 21.6	16 16.2	16 10.5	52 8	
16 56	4	15 59.3	15 57.0	15 54.5	15 51.5	15 48.3	15 44.7	15 41.0	15 36.9	15 32.5	15 27.8	15 22.8	15 17.6	15 12.0	4 56	4
17 0	19 0	14 59.4	14 57.1	14 54.5	14 51.7	14 48.5	14 45.1	14 41.4	14 37.5	14 33.2	14 28.6	14 23.9	14 18.9	14 13.6	5 0	7 0
4	18 56	13 59.4	13 57.2	13 54.6	13 51.8	13 48.8	13 45.4	13 41.8	13 38.0	13 34.0	13 29.6	13 25.0	13 20.2	13 15.2	4 6 56	
8	52	12 59.4	12 57.2	12 54.7	12 52.0	12 49.0	12 45.7	12 42.3	12 38.6	12 34.7	12 30.5	12 26.1	12 21.5	12 16.7	8 52	
12	48	11 59.5	11 57.3	11 54.8	11 52.1	11 49.2	11 46.0	11 42.7	11 39.2	11 35.4	11 31.3	11 27.2	11 22.8	11 18.2	12 48	
16	44	10 59.5	10 57.3	10 54.9	10 52.2	10 49.4	10 46.4	10 43.1	10 39.7	10 36.1	10 32.2	10 28.2	10 24.1	10 19.7	16 44	
20	40	9 59.6	9 57.4	9 55.0	9 52.4	9 49.6	9 46.7	9 43.5	9 40.3	9 36.8	9 33.1	9 29.2	9 25.3	9 21.2	20 40	
24	36	8 59.6	8 57.4	8 55.1	8 52.5	8 49.8	8 47.0	8 44.0	8 40.8	8 37.5	8 34.0	8 30.3	8 26.5	8 22.6	24 36	
28	32	7 59.6	7 57.5	7 55.2	7 52.7	7 50.0	7 47.3	7 44.4	7 41.4	7 38.2	7 34.8	7 31.3	7 27.8	7 24.1	28 32	
32	28	6 59.7	6 57.5	6 55.3	6 52.8	6 50.3	6 47.6	6 44.8	6 41.9	6 38.8	6 35.6	6 32.3	6 29.0	6 25.5	32 28	
36	24	5 59.7	5 57.6	5 55.3	5 53.0	5 50.5	5 47.9	5 45.2	5 42.4	5 39.5	5 36.4	5 33.3	5 30.2	5 26.9	36 24	
40	20	4 59.8	4 57.6	4 55.4	4 53.1	4 50.7	4 48.1	4 45.6	4 42.9	4 40.1	4 37.2	4 34.3	4 31.4	4 28.2	40 20	
44	16	3 59.8	3 57.7	3 55.5	3 53.2	3 50.9	3 48.4	3 45.9	3 43.4	3 40.8	3 38.0	3 35.3	3 32.5	3 29.7	44 16	
48	12	2 59.9	2 57.7	2 55.6	2 53.3	2 51.1	2 48.7	2 46.3	2 43.9	2 41.5	2 38.9	2 36.2	2 33.7	2 31.0	48 12	
52	8	1 59.9	1 57.8	1 55.6	1 53.5	1 51.2	1 49.0	1 46.7	1 44.4	1 42.1	1 39.7	1 37.2	1 34.8	1 32.4	52 8	
17 56	4	0 59.9	0 57.9	0 55.7	0 53.6	0 51.4	0 49.3	0 47.1	0 44.9	0 42.7	0 40.4	0 38.2	0 36.0	0 33.7	5 56	4
18 0	18 0	0 0.0	0 2.1	0 4.2	0 6.3	0 8.4	0 10.4	0 12.6	0 14.6	0 16.7	0 18.8	0 20.8	0 22.9	0 24.9	6 0	6 0

LATITUDE 2°.															
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.	
Declination														Declination	
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.
15 0	21 0	42 54.0	42 37.6	42 20.5	42 2.6	41 43.7	41 23.9	41 3.4	40 42.1	40 19.9	39 57.2	39 33.5	39 9.1	3 0	9 0
4	20 56	41 57.5	41 41.7	41 25.0	41 7.7	40 49.2	40 30.1	40 10.1	39 49.4	39 27.9	39 5.8	38 42.7	38 19.0	4	8 56
8	52	41 0.9	40 45.6	40 29.4	40 12.5	39 54.7	39 36.0	39 16.6	38 56.5	38 35.6	38 14.1	37 51.7	37 28.7	8	52
12	48	40 4.3	39 49.3	39 33.6	39 17.3	38 59.9	38 41.8	38 22.9	38 3.5	37 43.1	37 22.2	37 0.4	36 38.1	12	48
16	44	39 7.4	38 52.9	38 37.7	38 21.9	38 5.0	37 47.4	37 29.1	37 10.1	36 50.4	36 30.1	36 9.0	35 47.2	16	44
20	40	38 10.6	37 56.5	37 41.8	37 26.3	37 9.9	36 52.9	36 35.1	36 16.7	35 57.5	35 37.8	35 17.2	34 56.1	20	40
24	36	37 13.6	36 59.9	36 45.6	36 30.6	36 14.7	35 58.2	35 40.9	35 23.1	35 4.5	34 45.3	34 25.4	34 4.8	24	36
28	32	36 16.5	36 3.2	35 49.4	35 34.8	35 19.4	35 3.3	34 46.6	34 29.3	34 11.2	33 52.6	33 33.2	33 13.3	28	32
32	28	35 19.4	35 6.5	34 53.0	34 38.9	34 24.0	34 8.4	33 52.2	33 35.3	33 17.8	32 59.8	32 41.0	32 21.6	32	28
36	24	34 22.1	34 9.7	33 56.6	33 42.9	33 28.5	33 13.3	32 57.5	32 41.2	32 24.3	32 6.8	31 48.5	31 29.7	36	24
40	20	33 24.9	33 12.7	33 0.0	32 46.8	32 32.8	32 18.1	32 2.8	31 47.0	31 30.5	31 13.5	30 55.9	30 37.7	40	20
44	16	32 27.5	32 15.7	32 3.5	31 50.7	31 37.0	31 22.8	31 8.0	30 52.7	30 36.7	30 20.2	30 3.1	29 45.4	44	16
48	12	31 30.0	31 18.7	31 6.8	30 54.3	30 41.1	30 27.4	30 13.0	29 58.2	29 42.7	29 26.8	29 10.1	28 53.0	48	12
52	8	30 32.5	30 21.5	30 10.0	29 57.9	29 45.2	29 31.9	29 17.9	29 3.5	28 48.6	28 33.1	28 17.1	28 0.5	52	8
15 56	4	29 35.0	29 24.3	29 13.1	29 1.5	28 49.1	28 36.2	28 22.7	28 8.9	27 54.3	27 39.4	27 23.8	27 7.8	3 56	4
16 0	20 0	28 37.3	28 27.0	28 16.2	28 4.9	27 53.0	27 40.5	27 27.5	27 14.0	27 0.0	26 45.5	26 30.5	26 15.0	4 0	8 0
4	19 56	27 39.7	27 29.7	27 19.2	27 8.3	26 56.7	26 44.7	26 32.1	26 19.1	26 5.5	25 51.6	25 37.0	25 22.0	4	7 56
8	52	26 42.0	26 32.3	26 22.1	26 11.6	26 0.5	25 48.8	25 36.6	25 24.1	25 11.0	24 57.5	24 43.4	24 28.9	8	52
12	48	25 44.2	25 34.8	25 25.0	25 14.9	25 4.1	24 52.8	24 41.0	24 29.0	24 16.3	24 3.3	23 49.7	23 35.7	12	48
16	44	24 46.3	24 37.3	24 27.9	24 18.1	24 7.6	23 56.8	23 45.4	23 33.7	23 21.5	23 9.0	22 55.9	22 42.4	16	44
20	40	23 48.5	23 39.7	23 30.7	23 21.2	23 11.1	23 0.6	22 49.7	22 38.4	22 26.6	22 14.6	22 2.0	21 49.0	20	40
24	36	22 50.6	22 42.2	22 33.4	22 24.3	22 14.6	22 4.4	21 53.9	21 43.0	21 31.7	21 20.1	21 8.0	20 55.5	24	36
28	32	21 52.7	21 44.5	21 36.1	21 27.3	21 17.9	21 8.2	20 58.0	20 47.6	20 36.7	20 25.6	20 13.8	20 1.9	28	32
32	28	20 54.7	20 46.9	20 38.7	20 30.3	20 21.2	20 11.9	20 2.1	19 52.1	19 41.6	19 30.9	19 19.7	19 8.1	32	28
36	24	19 56.7	19 49.1	19 41.3	19 33.2	19 24.5	19 15.5	19 6.2	18 56.5	18 46.5	18 36.1	18 25.4	18 14.3	36	24
40	20	18 58.7	18 51.4	18 43.8	18 36.0	18 27.7	18 19.1	18 10.1	18 0.9	17 51.2	17 41.3	17 31.0	17 20.5	40	20
44	16	18 0.6	17 53.6	17 46.3	17 38.9	17 30.9	17 22.6	17 14.0	17 5.1	16 55.9	16 46.5	16 36.6	16 26.5	44	16
48	12	17 2.5	16 55.8	16 48.8	16 41.7	16 34.0	16 26.1	16 17.8	16 9.4	16 0.5	15 51.6	15 42.1	15 32.4	48	12
52	8	16 4.3	15 57.9	15 51.3	15 44.4	15 37.1	15 29.5	15 21.7	15 13.6	15 5.1	14 56.5	14 47.6	14 38.3	52	8
16 56	4	15 6.2	15 0.0	14 53.7	14 47.1	14 40.1	14 32.9	14 25.4	14 17.8	14 9.7	14 1.5	13 52.9	13 44.2	4 56	4
17 0	19 0	14 8.0	14 2.1	13 56.1	13 49.8	13 43.1	13 36.2	13 29.1	13 21.8	13 14.2	13 6.4	12 58.3	12 49.9	5 0	7 0
4	18 56	13 9.8	13 4.1	12 58.4	12 52.5	12 46.1	12 39.6	12 32.7	12 25.8	12 18.6	12 11.3	12 3.5	11 55.6	4	6 56
8	52	12 11.6	12 6.2	12 0.7	11 55.1	11 49.1	11 42.8	11 36.4	11 29.8	11 23.0	11 16.0	11 8.7	11 1.2	8	52
12	48	11 13.3	11 8.2	11 3.0	10 57.7	10 52.0	10 46.1	10 40.0	10 33.8	10 27.3	10 20.8	10 13.8	10 6.9	12	48
16	44	10 15.0	10 10.2	10 5.3	10 0.2	9 54.8	9 49.2	9 43.5	9 37.7	9 31.6	9 25.4	9 19.0	9 12.4	16	44
20	40	9 16.7	9 12.1	9 7.5	9 2.7	8 57.6	8 52.4	8 47.0	8 41.6	8 35.8	8 30.1	8 24.1	8 17.9	20	40
24	36	8 18.5	8 14.1	8 9.7	8 5.2	8 0.5	7 55.6	7 50.5	7 45.4	7 40.1	7 34.7	7 29.1	7 23.4	24	36
28	32	7 20.1	7 16.0	7 11.9	7 7.7	7 3.3	6 58.7	6 53.9	6 49.2	6 44.3	6 39.3	6 34.1	6 28.8	28	32
32	28	6 21.8	6 17.9	6 14.1	6 10.2	6 6.0	6 1.8	5 57.4	5 53.0	5 48.4	5 43.9	5 39.1	5 34.2	32	28
36	24	5 23.4	5 19.8	5 16.2	5 12.7	5 8.7	5 4.9	5 0.8	4 56.8	4 52.6	4 48.4	4 44.0	4 39.5	36	24
40	20	4 25.1	4 21.7	4 18.4	4 15.0	4 11.5	4 7.9	4 4.2	4 0.5	3 56.7	3 52.9	3 48.8	3 44.9	40	20
44	16	3 26.6	3 23.6	3 20.5	3 17.5	3 14.2	3 10.9	3 7.6	3 4.2	3 0.8	2 57.3	2 53.7	2 50.2	44	16
48	12	2 28.2	2 25.4	2 22.7	2 19.9	2 16.9	2 13.9	2 10.9	2 7.9	2 4.8	2 1.8	1 58.7	1 55.4	48	12
52	8	1 29.8	1 27.2	1 24.7	1 22.3	1 19.6	1 16.9	1 14.3	1 11.6	1 8.9	1 6.2	1 3.5	1 0.7	52	8
17 56	4	0 31.5	0 29.1	0 26.8	0 24.6	0 22.3	0 19.9	0 17.5	0 15.3	0 13.0	0 10.7	0 8.3	0 5.9	5 56	4
18 0	18 0	0 27.0	0 29.1	0 31.0	0 33.1	0 35.1	0 37.1	0 39.1	0 41.0	0 43.0	0 44.9	0 46.9	0 48.8	6 0	6 0

LATITUDE 3°.

TRUE ALTITUDE OF BODY.

LATITUDE 3°.

Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.		
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°
h. m.																h. m.
24 0	87 0 0	88 0 0	89 0 0	90 0 0	89 0 0	88 0 0	87 0 0	86 0 0	85 0 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	0 0	0
23 56	86 50 2	87 45 8	88 35 2	89 0 1	88 35 2	87 45 9	86 50 3	85 52 7	84 54 1	83 55 1	82 55 7	81 56 3	80 56 7	4	4	4
52	86 23 6	87 10 3	87 46 0	88 0 2	87 46 1	87 10 5	86 23 8	85 31 8	84 37 1	83 40 7	82 43 4	81 45 4	80 47 0	8	8	8
48	85 45 4	86 23 8	86 50 5	87 0 2	86 50 6	86 24 0	85 45 8	85 0 4	84 10 6	83 17 9	82 23 5	81 27 9	80 31 3	12	12	12
44	85 0 1	85 31 8	85 52 8	86 0 3	85 53 0	85 32 2	85 0 6	84 21 2	83 36 5	82 48 1	81 57 1	81 4 1	80 10 0	16	16	16
40	84 10 2	84 37 1	84 54 4	85 0 4	84 54 6	84 37 6	84 10 9	83 36 7	82 56 7	82 12 5	81 25 0	80 35 2	79 43 6	20	20	20
36	83 17 6	83 40 7	83 55 4	84 0 5	83 55 6	83 41 3	83 18 5	82 43 5	82 12 7	81 32 2	80 48 3	80 1 6	79 12 9	24	24	24
32	82 23 2	82 43 5	82 56 1	83 0 6	82 56 5	82 44 2	82 24 3	81 57 8	81 25 4	80 48 6	80 7 9	79 24 5	78 38 4	28	28	28
28	81 27 5	81 45 5	81 56 7	82 0 7	81 57 1	81 46 3	81 28 8	81 5 0	80 36 0	80 2 1	79 24 8	78 44 2	78 0 6	32	32	32
24	80 31 0	80 47 1	80 57 2	81 0 7	80 57 7	80 48 1	80 32 4	80 11 0	79 44 6	79 13 7	78 38 9	78 1 0	77 20 1	36	36	36
20	79 33 8	79 48 5	79 57 6	80 0 8	79 58 1	79 49 6	79 35 4	79 16 0	78 51 8	78 23 4	77 51 0	77 15 6	76 37 1	40	40	40
16	78 36 1	78 49 5	78 57 9	79 0 9	78 58 4	78 50 8	78 37 9	78 20 3	77 57 9	77 31 7	77 1 7	76 28 5	75 52 3	44	44	44
12	77 38 2	77 50 5	77 58 2	78 1 0	77 58 8	77 51 8	77 40 1	77 24 1	77 3 2	76 38 7	76 10 9	75 39 7	75 5 6	48	48	48
8	76 39 9	76 51 3	76 58 5	77 1 1	76 59 1	76 52 7	76 42 0	76 27 1	76 7 8	75 45 1	75 19 0	74 49 7	74 17 5	52	52	52
4	75 41 3	75 52 0	75 58 6	76 1 1	75 59 5	75 53 5	75 43 7	75 29 6	75 11 8	74 50 7	74 26 3	73 58 7	73 28 3	56	56	56
23 0	74 42 6	74 52 6	74 58 9	75 1 3	74 59 8	74 54 2	74 45 0	74 32 0	74 15 6	73 55 6	73 32 6	73 6 7	72 37 9	1 0	1 0	1 0
22 56	73 43 7	73 53 0	73 59 2	74 1 3	74 0 0	73 54 8	73 46 4	73 34 2	73 18 7	73 0 1	72 38 4	72 14 0	71 46 8	4	4	4
52	72 44 7	72 53 6	72 59 4	73 1 4	73 0 2	72 55 4	72 47 5	72 36 2	72 21 6	72 4 1	71 43 7	71 20 5	70 54 7	8	8	8
48	71 45 6	71 54 0	71 59 5	72 1 5	72 0 4	71 55 9	71 48 5	71 38 0	71 24 3	71 7 7	70 4 7	70 26 4	70 2 0	12	12	12
44	70 46 4	70 54 5	70 59 5	71 1 6	70 6 7	70 56 5	70 49 6	70 39 5	70 26 6	70 11 0	69 52 8	69 31 9	69 8 6	16	16	16
40	69 47 1	69 54 9	69 59 7	70 1 6	69 57 0	69 50 5	69 41 1	69 28 7	69 14 0	68 56 7	68 37 0	68 14 8	20	20	20	
36	68 47 8	68 55 2	68 59 9	69 1 8	68 57 3	68 51 3	68 42 5	68 30 8	68 16 7	68 0 4	67 41 6	67 20 5	24	24	24	
32	67 48 4	67 55 4	68 0 1	68 2 0	67 57 8	67 52 0	67 43 6	67 32 7	67 19 4	67 3 7	66 45 9	66 25 8	28	28	28	
28	66 48 9	66 55 7	67 0 1	67 2 0	66 58 2	66 52 7	66 44 8	66 34 4	66 21 8	66 7 0	65 49 8	65 30 7	32	32	32	
24	65 49 5	65 56 0	66 0 2	66 2 1	65 58 6	65 53 5	65 45 9	65 36 0	65 24 0	65 10 6	64 58 6	64 35 3	36	36	36	
20	64 50 0	64 56 2	65 0 3	65 2 1	64 59 0	64 54 2	64 47 0	64 37 5	64 26 2	64 12 6	63 57 2	63 39 6	40	40	40	
16	63 50 4	63 56 5	64 0 4	64 2 2	63 59 3	63 54 7	63 48 0	63 39 0	63 28 3	63 15 3	63 0 4	62 43 8	44	44	44	
12	62 50 8	62 56 6	63 0 6	63 2 3	62 59 6	62 55 2	62 48 9	62 40 4	62 30 1	62 17 7	62 3 5	61 47 5	48	48	48	
8	61 51 1	61 56 9	62 0 6	62 2 4	61 59 6	61 55 8	61 49 8	61 41 7	61 31 8	61 20 1	61 6 4	60 51 1	52	52	52	
4	60 51 5	60 57 0	61 0 8	61 2 4	60 56 3	60 50 7	60 42 8	60 33 5	60 22 3	60 9 3	59 54 5	1 56	1 56	1 56	1 56	1 56
22 0	59 51 9	59 57 2	60 0 8	60 2 5	59 56 0	59 51 4	59 44 1	59 35 0	59 24 4	59 11 9	58 57 8	2 0	2 0	2 0	2 0	2 0
21 56	58 52 2	58 57 3	59 0 9	59 2 6	58 56 9	58 52 2	58 45 1	58 36 6	58 26 3	58 14 5	58 0 9	4	4	4	4	4
52	57 52 5	57 57 5	58 1 0	58 2 7	57 58 8	57 52 9	57 46 2	57 38 0	57 28 3	57 16 7	57 3 9	8	8	8	8	8
48	56 52 7	56 57 7	57 1 1	57 2 8	56 57 7	56 51 5	56 44 8	56 37 5	56 29 5	56 19 1	56 6 6	12	12	12	12	12
44	55 53 0	55 57 8	56 1 2	56 2 9	55 58 5	55 52 4	55 45 5	55 38 2	55 30 5	55 21 2	55 9 3	16	16	16	16	16
40	54 53 3	54 58 0	55 1 3	55 3 0	54 58 2	54 51 5	54 44 2	54 36 5	54 28 4	54 19 9	54 11 9	20	20	20	20	20
36	53 53 5	53 58 1	54 1 4	54 3 1	53 57 5	53 50 1	53 42 3	53 34 3	53 25 5	53 14 4	53 4 5	24	24	24	24	24
32	52 53 8	52 58 3	53 1 4	53 3 2	52 57 8	52 50 2	52 42 4	52 34 4	52 25 7	52 16 8	52 7 9	28	28	28	28	28
28	51 54 0	51 58 4	52 1 5	52 3 3	51 57 9	51 50 3	51 42 5	51 34 5	51 25 8	51 16 9	51 7 0	32	32	32	32	32
24	50 54 2	50 58 5	51 1 6	51 3 4	50 57 7	50 50 1	50 42 3	50 34 3	50 25 6	50 16 7	50 7 8	36	36	36	36	36
20	49 54 4	49 58 6	50 1 7	50 3 5	49 57 8	49 50 2	49 42 4	49 34 4	49 25 7	49 16 8	49 7 9	40	40	40	40	40
16	48 54 6	48 58 8	49 1 8	49 3 6	48 57 9	48 50 3	48 42 5	48 34 5	48 25 8	48 16 9	48 7 0	44	44	44	44	44
12	47 54 8	47 58 8	48 1 9	48 3 7	47 57 9	47 50 3	47 42 5	47 34 5	47 25 8	47 16 9	47 7 0	48	48	48	48	48
8	46 55 0	46 59 0	47 1 9	47 3 7	46 58 0	46 50 4	46 42 6	46 34 6	46 25 9	46 17 0	46 8 1	52	52	52	52	52
4	45 55 1	45 59 1	46 2 0	46 3 8	45 58 1	45 50 5	45 42 7	45 34 7	45 26 0	45 17 1	45 8 2	56	56	56	56	56
21 0	44 55 3	44 59 2	45 2 1	45 4 0	44 58 2	44 50 6	44 42 8	44 34 8	44 26 1	44 17 2	44 8 3	60	60	60	60	60

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		LATITUDE 3°.													
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
24 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	73 0 0	72 0 0	71 0 0	70 0 0	69 0 0	68 0 0	0 0	0 0
23 56	79 57.1	78 57.3	77 57.5	76 57.7	75 57.9	74 58.0	73 58.1	72 58.2	71 58.3	70 58.4	69 58.6	68 58.7	67 58.8	4	4
52	79 48.3	78 49.2	77 50.3	76 51.1	75 51.8	74 52.4	73 52.8	72 53.3	71 53.8	70 54.1	69 54.5	68 54.6	67 54.6	8	8
48	79 34.1	78 36.2	77 38.5	76 40.1	75 41.6	74 42.8	73 43.8	72 44.9	71 46.0	70 46.8	69 47.5	68 48.1	67 48.1	12	12
44	79 14.8	78 18.6	77 22.3	76 25.0	75 27.6	74 29.9	73 31.5	72 33.2	71 35.1	70 36.4	69 37.9	68 38.9	67 38.9	16	16
40	78 50.7	77 56.6	77 1.9	76 6.1	75 9.8	74 13.2	73 16.1	72 18.7	71 21.2	70 23.3	69 25.4	68 27.1	67 27.1	20	20
36	78 22.4	77 30.4	76 37.4	75 43.3	74 48.6	73 53.3	72 57.4	72 1.0	71 4.7	70 7.5	69 10.3	68 12.9	67 12.9	24	24
32	77 50.3	77 0.3	76 9.6	75 17.3	74 24.2	73 30.4	72 35.8	71 40.6	70 45.3	69 49.2	68 52.9	67 56.2	66 56.2	28	28
28	77 15.0	76 27.4	75 38.4	74 48.3	73 56.8	73 4.6	72 11.2	71 17.4	70 23.3	69 28.4	68 33.1	67 37.3	66 37.3	32	32
24	76 36.8	75 51.4	75 4.7	74 16.3	73 26.6	72 36.0	71 44.1	70 51.7	69 58.9	69 5.2	68 11.0	67 16.2	66 16.2	36	36
20	75 56.1	75 13.0	74 28.4	73 41.8	72 53.9	72 4.9	71 14.7	70 23.7	69 32.2	68 39.6	67 46.7	66 53.1	65 53.1	40	40
16	75 13.4	74 32.4	73 49.7	73 5.1	72 19.0	71 31.6	70 43.0	69 53.6	69 3.4	68 12.1	67 20.4	66 27.8	65 27.8	44	44
12	74 29.0	73 49.8	73 9.1	72 26.4	71 42.3	70 56.3	70 9.3	69 21.3	68 32.6	67 42.6	66 52.1	66 0.8	65 0.8	48	48
8	73 42.8	73 5.7	72 26.7	71 45.8	71 3.2	70 19.2	69 33.6	68 47.1	67 59.9	67 11.3	66 22.1	65 31.9	64 31.9	52	52
4	72 55.4	72 20.0	71 42.8	71 3.6	70 22.7	69 40.2	68 56.4	68 11.3	67 25.4	66 38.4	65 50.3	65 1.4	64 1.4	0 56	0 56
23 0	72 6.6	71 33.0	70 57.6	70 20.0	69 40.8	68 59.8	68 17.4	67 33.9	66 49.4	66 3.5	65 16.9	64 29.2	63 29.2	1 0	1 0
22 56	71 16.9	70 44.9	70 11.1	69 34.9	68 57.5	68 18.0	67 37.0	66 55.0	66 11.9	65 27.4	64 42.0	63 55.7	62 55.7	4	4
52	70 26.4	69 55.9	69 23.4	68 49.0	68 13.0	67 34.8	66 55.5	66 14.7	65 33.1	64 49.9	64 5.8	63 20.6	62 20.6	8	8
48	69 35.1	69 5.9	68 34.9	68 1.9	67 27.2	66 50.7	66 12.6	65 33.3	64 52.9	64 11.1	63 28.3	62 44.3	61 44.3	12	12
44	68 42.9	68 15.2	67 45.5	67 13.8	66 40.6	66 5.3	65 28.8	64 50.7	64 11.6	63 31.1	62 49.5	62 6.8	61 6.8	16	16
40	67 50.3	67 23.7	66 55.4	66 24.9	65 53.0	65 19.2	64 43.7	64 7.1	63 29.3	62 50.0	62 9.6	61 28.1	60 28.1	20	20
36	66 57.1	66 31.6	66 4.6	65 35.5	65 4.7	64 32.0	63 57.9	63 22.5	62 46.0	62 7.8	61 28.7	60 48.4	59 48.4	24	24
32	66 3.4	65 39.2	65 13.1	64 45.1	64 15.6	63 44.2	63 11.3	62 37.1	62 1.6	61 24.8	60 46.9	60 7.7	59 7.7	28	28
28	65 9.4	64 46.1	64 21.2	63 54.3	63 25.9	62 55.7	62 23.9	61 50.9	61 16.6	60 40.8	60 4.1	59 26.1	58 26.1	32	32
24	64 14.9	63 52.6	63 28.6	63 2.9	62 35.5	62 6.4	61 35.7	61 3.8	60 30.7	59 56.2	59 20.5	58 43.7	57 43.7	36	36
20	63 20.1	62 58.7	62 35.7	62 10.9	61 44.7	61 16.4	60 47.0	60 16.2	59 44.1	59 10.8	58 36.1	58 0.3	57 0.3	40	40
16	62 24.9	62 4.4	61 42.3	61 18.6	60 53.2	60 26.2	59 57.6	59 28.0	58 57.0	58 24.5	57 51.0	57 16.3	56 16.3	44	44
12	61 29.6	61 9.9	60 48.7	60 25.7	60 1.4	59 35.3	59 7.8	58 39.0	58 9.1	57 37.7	57 5.3	56 31.6	55 31.6	48	48
8	60 33.9	60 15.1	59 54.7	59 32.6	59 9.1	58 43.9	58 17.5	57 49.6	57 20.7	56 50.3	56 18.9	55 46.2	54 46.2	52	52
4	59 38.0	59 19.8	59 0.4	58 38.9	58 16.4	57 52.2	57 26.6	56 59.7	56 31.8	56 2.4	55 31.8	55 0.3	54 0.3	1 56	1 56
22 0	58 41.8	58 24.5	58 5.7	57 45.3	57 23.5	57 0.1	56 35.3	56 9.4	55 42.4	55 13.9	54 44.4	54 13.7	53 13.7	2 0	2 0
21 56	57 45.7	57 28.8	57 10.7	56 51.2	56 30.2	56 7.6	55 43.7	55 18.6	54 52.4	54 25.0	53 56.4	53 26.6	52 26.6	4	4
52	56 49.2	56 33.1	56 15.7	55 56.6	55 36.5	55 14.8	54 51.7	54 27.5	54 2.2	53 35.6	53 7.9	52 39.0	51 39.0	8	8
48	55 52.6	55 37.2	55 20.4	55 1.9	54 42.6	54 21.6	53 59.4	53 36.0	53 11.5	52 45.8	52 18.9	51 51.0	50 51.0	12	12
44	54 55.9	54 41.0	54 24.9	54 7.3	53 48.5	53 28.2	53 6.8	52 44.2	52 20.6	51 55.5	51 29.6	51 2.5	50 2.5	16	16
40	53 59.0	53 44.6	53 29.2	53 12.3	52 54.1	52 34.5	52 13.8	51 52.0	51 29.2	51 5.1	50 39.8	50 13.6	49 13.6	20	20
36	53 1.9	52 48.2	52 33.3	52 17.0	51 59.6	51 40.6	51 20.6	50 59.5	50 37.5	50 14.1	49 49.8	49 24.4	48 24.4	24	24
32	52 4.8	51 51.6	51 37.2	51 21.6	51 4.8	50 46.6	50 27.2	50 6.8	49 45.5	49 22.9	48 59.4	48 34.7	47 34.7	28	28
28	51 7.6	50 54.9	50 41.1	50 26.0	50 9.8	49 52.2	49 33.6	49 13.9	48 53.3	48 31.4	48 8.6	47 44.8	46 44.8	32	32
24	50 10.2	49 58.1	49 44.8	49 30.2	49 14.6	48 57.7	48 39.6	48 20.7	48 0.8	47 39.6	47 17.6	46 54.5	45 54.5	36	36
20	49 12.9	49 1.1	48 48.4	48 34.3	48 19.3	48 3.0	47 45.6	47 27.3	47 8.1	46 47.6	46 26.2	46 3.9	45 3.9	40	40
16	48 15.4	48 4.1	47 51.8	47 38.3	47 23.8	47 8.0	46 51.4	46 33.6	46 15.1	45 55.4	45 34.7	45 13.1	44 13.1	44	44
12	47 17.8	47 6.9	46 55.2	46 42.1	46 28.3	46 13.1	45 56.9	45 39.8	45 21.9	45 2.8	44 42.9	44 22.0	43 22.0	48	48
8	46 20.2	46 9.8	45 58.4	45 46.0	45 32.5	45 17.9	45 2.3	44 45.8	44 28.5	44 10.1	43 50.9	43 30.7	42 30.7	52	52
4	45 22.5	45 12.4	45 1.6	44 49.6	44 36.7	44 22.6	44 7.6	43 51.7	43 35.0	43 17.2	42 58.6	42 39.1	41 39.1	2 56	2 56
21 0	44 24.7	44 15.2	44 4.6	43 53.1	43 40.7	43 27.1	43 12.6	42 57.4	42 41.3	42 24.1	42 6.1	41 47.2	40 47.2	3 0	3 0

LATITUDE 3°.																	
Westerly		DECLINATION — same Name as — LATITUDE.														Westerly	
Hour																Hour	
Angle.		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Angle.		
h.	m.															h.	m.
21	0	44 55.3	44 59.2	45 2.1	45 4.0	45 4.7	45 4.3	45 3.1	45 0.7	44 57.2	44 52.8	44 47.4	44 40.8	44 33.3	3	0	
20	56	43 55.5	43 59.3	44 2.2	44 4.0	44 4.8	44 4.6	44 3.4	44 1.2	43 58.0	43 53.8	43 48.6	43 42.3	43 35.1		4	
	52	42 55.6	42 59.4	43 2.3	43 4.1	43 4.9	43 4.8	43 3.6	43 1.8	42 58.6	42 54.7	42 49.7	42 43.8	42 36.9		8	
	48	41 55.8	41 59.5	42 2.3	42 4.2	42 5.1	42 5.1	42 4.2	42 2.4	41 59.3	41 55.6	41 50.8	41 45.2	41 38.7		12	
	44	40 55.9	40 59.6	41 2.5	41 4.3	41 5.3	41 5.3	41 4.5	41 2.7	41 0.0	40 56.4	40 52.0	40 46.6	40 40.3		16	
	40	39 56.0	39 59.7	40 2.5	40 4.5	40 5.4	40 5.5	40 4.8	40 3.2	40 0.6	39 57.3	39 53.1	39 47.9	39 42.0		20	
	36	38 56.2	38 59.7	39 2.6	39 4.5	39 5.6	39 5.7	39 5.2	39 3.7	39 1.3	38 58.2	38 54.2	38 49.3	38 43.6		24	
	32	37 56.3	37 59.9	38 2.7	38 4.6	38 5.7	38 6.0	38 5.5	38 4.2	38 2.0	37 59.0	37 55.2	37 50.6	37 45.2		28	
	28	36 56.4	36 59.9	37 2.8	37 4.7	37 5.9	37 6.2	37 5.9	37 4.6	37 2.6	36 59.8	36 56.2	36 51.9	36 46.8		32	
	24	35 56.6	35 6.0	36 2.8	36 4.8	36 6.0	36 6.4	36 6.2	36 5.1	36 3.2	35 57.3	35 53.2	35 48.4			36	
	20	34 56.7	34 6.1	35 3.0	35 4.8	35 6.2	35 6.7	35 6.5	35 5.6	35 3.8	34 58.3	34 54.5	34 49.9			40	
	16	33 56.8	34 6.3	34 3.0	34 5.0	34 6.3	34 6.9	34 6.8	34 6.0	34 4.4	33 59.3	33 55.7	33 51.4			44	
	12	32 57.0	33 6.3	33 1.3	33 5.1	33 6.5	33 7.1	33 7.1	33 6.5	33 5.0	33 3.1	32 56.9	32 52.8			48	
	8	31 57.1	32 6.5	32 2.3	32 5.2	32 6.6	32 7.3	32 7.4	32 6.9	32 5.6	32 3.8	31 58.1	31 54.3			52	
	4	30 57.2	31 6.5	31 3.3	31 5.3	31 6.8	31 7.6	31 7.8	31 7.4	31 6.3	31 4.5	30 59.3	30 55.8		3	56	
20	0	29 57.3	30 6.6	30 3.3	30 5.4	30 6.9	30 7.8	30 8.1	30 7.9	30 6.8	30 5.3	30 3.2	30 0.5	29 57.2	4	0	
19	56	28 57.4	29 6.7	29 3.5	29 5.5	29 7.1	29 8.0	29 8.4	29 8.3	29 7.4	29 6.0	29 4.2	29 1.7	28 58.6		4	
	52	27 57.5	28 6.7	28 3.5	28 5.7	28 7.3	28 8.3	28 8.8	28 8.7	28 8.0	28 6.9	28 5.1	28 2.9	28 0.0		8	
	48	26 57.6	27 6.8	27 3.6	27 5.8	27 7.5	27 8.5	27 9.1	27 9.1	27 8.6	27 7.6	27 6.1	27 4.0	27 1.4		12	
	44	25 57.7	26 6.9	26 3.7	26 5.9	26 7.6	26 8.7	26 9.4	26 9.6	26 9.2	26 8.4	26 7.0	26 5.2	26 2.7		16	
	40	24 57.8	25 7.0	25 3.8	25 6.0	25 7.7	25 9.0	25 9.8	25 10.0	25 9.8	25 9.1	25 8.0	25 6.3	25 4.1		20	
	36	23 57.9	24 7.1	24 3.8	24 6.1	24 7.9	24 9.2	24 10.1	24 10.6	24 10.4	24 9.9	24 8.9	24 7.4	24 5.5		24	
	32	22 58.0	23 7.2	23 3.9	23 6.2	23 8.1	23 9.4	23 10.5	23 11.0	23 11.0	23 10.6	23 9.8	23 8.6	23 6.8		28	
	28	21 58.1	22 7.2	22 4.0	22 6.3	22 8.3	22 9.7	22 10.8	22 11.4	22 11.6	22 11.4	22 10.7	22 9.7	22 8.2		32	
	24	20 58.2	21 7.3	21 4.1	21 6.5	21 8.5	21 9.9	21 11.1	21 11.8	21 12.1	21 12.1	21 11.7	21 10.8	21 9.5		36	
	20	19 58.3	20 7.4	20 4.2	20 6.6	20 8.6	20 10.2	20 11.4	20 12.3	20 12.7	20 12.8	20 12.6	20 11.9	20 10.8		40	
	16	18 58.4	19 7.5	19 4.3	19 6.7	19 8.8	19 10.4	19 11.8	19 12.7	19 13.3	19 13.6	19 13.5	19 13.0	19 12.2		44	
	12	17 58.5	18 7.6	18 4.4	18 6.8	18 8.9	18 10.7	18 12.1	18 13.2	18 13.9	18 14.3	18 14.4	18 14.1	18 13.5		48	
	8	16 58.6	17 7.7	17 4.5	17 6.9	17 9.1	17 10.9	17 12.5	17 13.7	17 14.5	17 15.0	17 15.3	17 15.1	17 14.7		52	
	4	15 58.6	16 7.8	16 4.6	16 7.1	16 9.3	16 11.1	16 12.8	16 14.2	16 15.1	16 15.8	16 16.2	16 16.3	16 16.1		4	
19	0	14 58.7	15 7.9	15 4.7	15 7.2	15 9.5	15 11.4	15 13.1	15 14.6	15 15.7	15 16.5	15 17.1	15 17.4	15 17.4		5	
18	56	13 58.8	14 8.0	14 4.8	14 7.4	14 9.7	14 11.7	14 13.5	14 15.0	14 16.2	14 17.3	14 18.0	14 18.5	14 18.7		0	
	52	12 58.9	13 8.1	13 4.8	13 7.5	13 9.9	13 11.9	13 13.9	13 15.5	13 16.8	13 18.0	13 19.0	13 19.6	13 20.0		4	
	48	11 59.0	12 8.2	12 5.0	12 7.6	12 10.0	12 12.2	12 14.2	12 16.0	12 17.4	12 18.8	12 19.9	12 20.7	12 21.3		8	
	44	10 59.1	11 8.3	11 5.1	11 7.7	11 10.2	11 12.5	11 14.6	11 16.4	11 18.0	11 19.5	11 20.8	11 21.8	11 22.6		12	
	40	9 59.2	10 8.4	10 5.2	10 7.9	10 10.4	10 12.7	10 15.0	10 16.9	10 18.7	10 20.3	10 21.7	10 22.9	10 23.9		16	
	36	8 59.3	9 8.5	9 5.3	9 8.0	9 10.6	9 13.0	9 15.3	9 17.4	9 19.3	9 21.0	9 22.6	9 24.0	9 25.3		20	
	32	7 59.4	8 8.6	8 5.4	8 8.1	8 10.8	8 13.3	8 15.7	8 17.9	8 19.9	8 21.8	8 23.5	8 25.2	8 26.6		24	
	28	6 59.4	7 8.7	7 5.5	7 8.3	7 11.0	7 13.6	7 16.1	7 18.4	7 20.5	7 22.6	7 24.5	7 26.3	7 28.0		28	
	24	5 59.5	6 8.8	6 5.6	6 8.5	6 11.3	6 13.9	6 16.4	6 18.9	6 21.1	6 23.3	6 25.5	6 27.5	6 29.3		32	
	20	4 59.6	5 8.9	5 5.7	5 8.7	5 11.5	5 14.2	5 16.8	5 19.4	5 21.8	5 24.1	5 26.4	5 28.6	5 30.6		36	
	16	3 59.7	4 9.0	4 5.8	4 8.8	4 11.7	4 14.4	4 17.2	4 19.9	4 22.4	4 24.9	4 27.3	4 29.7	4 32.0		40	
	12	2 59.8	3 9.1	3 5.9	3 8.9	3 11.9	3 14.7	3 17.6	3 20.4	3 23.0	3 25.7	3 28.3	3 30.8	3 33.3		44	
	8	1 59.9	2 9.2	2 6.1	2 9.0	2 12.1	2 15.0	2 18.0	2 20.9	2 23.7	2 26.5	2 29.3	2 32.0	2 34.7		48	
	4	1 0.0	1 9.3	1 6.1	1 9.2	1 12.3	1 15.3	1 18.4	1 21.4	1 24.3	1 27.3	1 30.3	1 33.1	1 36.1		52	
18	0	0 0.0	0 9.4	0 6.3	0 9.4	0 12.6	0 15.6	0 18.8	0 21.9	0 25.0	0 28.2	0 31.2	0 34.3	0 37.4		5	
																56	
																0	

2

The thin horizontal line indicates

		LATITUDE 3°.																									
Westerly		DECLINATION — same Name as — LATITUDE.												Westerly													
Hour														Hour													
Angle.		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Angle.													
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.										
21	0	44	24.7	44	15.2	44	4.6	43	53.1	43	40.7	43	27.1	43	12.6	42	57.4	42	41.3	42	24.1	42	6.1	41	47.2	3	0
20	56	43	26.9	43	17.7	43	7.6	42	56.5	42	44.6	42	31.5	42	17.7	42	2.9	41	47.4	41	30.8	41	13.4	40	55.2	4	
	52	42	29.0	42	20.2	42	10.5	41	59.9	41	48.4	41	35.9	41	22.5	41	8.3	40	53.3	40	37.3	40	20.6	40	3.0	8	
	48	41	31.1	41	22.6	41	13.4	41	3.2	40	52.2	40	40.1	40	27.2	40	13.5	39	59.1	39	43.7	39	27.6	39	10.6	12	
	44	40	33.1	40	25.0	40	16.1	40	6.4	39	55.8	39	44.2	39	31.8	39	18.6	39	4.8	38	50.0	38	34.4	38	18.1	16	
	40	39	35.1	39	27.4	39	18.9	39	9.5	38	59.4	38	48.2	38	36.3	38	23.7	38	10.4	37	56.1	37	41.2	37	25.4	20	
	36	38	37.1	38	29.7	38	21.6	38	12.6	38	2.8	37	52.1	37	40.7	37	28.6	37	15.8	37	2.1	36	47.7	36	32.5	24	
	32	37	39.0	37	31.9	37	24.2	37	15.6	37	6.2	36	56.0	36	45.1	36	33.4	36	21.1	36	7.9	35	54.1	35	39.5	28	
	28	36	40.9	36	34.1	36	26.7	36	18.5	36	9.6	35	59.8	35	49.3	35	38.1	35	26.3	35	13.7	35	0.4	34	46.3	32	
	24	35	42.7	35	36.3	35	29.2	35	21.4	35	12.9	35	3.5	34	53.5	34	42.8	34	31.4	34	19.3	34	6.6	33	53.0	36	
	20	34	44.5	34	38.4	34	31.7	34	24.3	34	16.1	34	7.2	33	57.6	33	47.3	33	36.4	33	24.8	33	12.6	32	59.6	40	
	16	33	46.2	33	40.6	33	34.2	33	27.1	33	19.3	33	10.8	33	1.6	32	51.8	32	41.4	32	30.2	32	18.5	32	6.1	44	
	12	32	48.0	32	42.6	32	36.6	32	29.9	32	22.5	32	14.3	32	5.5	31	56.2	31	46.3	31	35.6	31	24.4	31	12.5	48	
	8	31	49.8	31	44.6	31	38.9	31	32.5	31	25.5	31	17.8	31	9.4	31	0.5	30	51.0	30	40.9	30	30.1	30	18.8	52	
	4	30	51.5	30	46.7	30	41.3	30	35.2	30	28.6	30	21.2	30	13.2	30	4.7	29	55.8	29	46.0	29	35.8	29	24.9	3	56
20	0	29	53.3	29	48.6	29	43.5	29	37.8	29	31.5	29	24.6	29	17.0	29	9.0	29	0.4	28	51.2	28	41.4	28	31.1	4	0
19	56	28	54.9	28	50.6	28	45.8	28	40.4	28	34.5	28	27.9	28	20.8	28	13.1	28	5.0	27	56.2	27	46.9	27	37.0	4	
	52	27	56.5	27	52.5	27	48.1	27	43.0	27	37.4	27	31.2	27	24.4	27	17.2	27	9.5	27	1.2	26	52.3	26	43.0	8	
	48	26	58.1	26	54.5	26	50.3	26	45.5	26	40.3	26	34.4	26	28.1	26	21.2	26	14.0	26	6.0	25	57.7	25	48.8	12	
	44	25	59.8	25	56.3	25	52.5	25	48.1	25	43.2	25	37.6	25	31.6	25	25.2	25	18.3	25	10.9	25	3.0	24	54.7	16	
	40	25	1.4	24	58.2	24	54.7	24	50.5	24	46.0	24	40.9	24	35.2	24	29.1	24	22.7	24	15.7	24	8.3	24	0.4	20	
	36	24	3.0	24	0.1	23	56.8	23	53.0	23	48.8	23	44.0	23	38.7	23	33.0	23	27.0	23	20.5	23	13.5	23	6.0	24	
	32	23	4.6	23	2.0	22	58.9	22	55.5	22	51.5	22	47.0	22	42.2	22	36.9	22	31.3	22	25.2	22	18.6	22	11.6	28	
	28	22	6.2	22	3.8	22	1.1	21	57.9	21	54.3	21	50.1	21	45.6	21	40.8	21	35.6	21	29.8	21	23.7	21	17.2	32	
	24	21	7.7	21	5.6	21	3.2	21	0.3	20	57.0	20	53.2	20	49.1	20	44.6	20	39.8	20	34.5	20	28.8	20	22.7	36	
	20	20	9.3	20	7.4	20	5.3	20	2.7	19	59.7	19	56.3	19	52.5	19	48.4	19	43.9	19	39.0	19	33.8	19	28.2	40	
	16	19	10.8	19	9.3	19	7.3	19	5.1	19	2.4	18	59.4	18	55.8	18	52.1	18	48.1	18	43.6	18	38.8	18	33.6	44	
	12	18	12.4	18	11.0	18	9.5	18	7.4	18	5.1	18	2.3	17	59.2	17	55.8	17	52.2	17	48.1	17	43.8	17	39.0	48	
	8	17	14.0	17	12.9	17	11.5	17	9.8	17	7.8	17	5.3	17	2.6	16	59.6	16	56.3	16	52.6	16	48.6	16	44.3	52	
	4	16	15.5	16	14.7	16	13.6	16	12.1	16	10.4	16	8.3	16	5.9	16	3.2	16	0.4	15	57.0	15	53.5	15	49.6	4	56
19	0	15	17.1	15	16.5	15	15.6	15	14.5	15	13.0	15	11.3	15	9.2	15	6.9	15	4.4	15	1.5	14	58.4	14	55.0	5	0
18	56	14	18.6	14	18.2	14	17.7	14	16.8	14	15.7	14	14.2	14	12.6	14	10.6	14	8.5	14	5.9	14	3.3	14	0.2	4	
	52	13	20.1	13	20.0	13	19.7	13	19.1	13	18.4	13	17.2	13	15.8	13	14.2	13	12.5	13	10.4	13	8.1	13	5.5	8	
	48	12	21.7	12	21.8	12	21.8	12	21.5	12	21.0	12	20.1	12	19.1	12	17.8	12	16.5	12	14.7	12	12.9	12	10.7	12	
	44	11	23.2	11	23.6	11	23.8	11	23.8	11	23.6	11	23.1	11	22.4	11	21.5	11	20.4	11	19.2	11	17.7	11	15.9	16	
	40	10	24.8	10	25.4	10	25.9	10	26.1	10	26.2	10	26.0	10	25.6	10	25.1	10	24.5	10	23.5	10	22.5	10	21.1	20	
	36	9	26.3	9	27.2	9	27.9	9	28.4	9	28.8	9	28.9	9	28.9	9	28.7	9	28.5	9	27.9	9	27.2	9	26.3	24	
	32	8	27.8	8	28.9	8	30.0	8	30.8	8	31.5	8	31.9	8	32.2	8	32.3	8	32.4	8	32.3	8	32.0	8	31.5	28	
	28	7	29.4	7	30.7	7	32.0	7	33.1	7	34.1	7	34.8	7	35.4	7	35.9	7	36.4	7	36.6	7	36.8	7	36.7	32	
	24	6	31.0	6	32.5	6	34.0	6	35.4	6	36.7	6	37.8	6	38.7	6	39.6	6	40.4	6	41.0	6	41.5	6	41.9	36	
	20	5	32.5	5	34.3	5	36.1	5	37.7	5	39.3	5	40.7	5	42.0	5	43.2	5	44.4	5	45.3	5	46.3	5	47.1	40	
	16	4	34.1	4	36.1	4	38.2	4	40.1	4	42.0	4	43.7	4	45.3	4	46.8	4	48.4	4	49.8	4	51.1	4	52.3	44	
	12	3	35.7	3	38.0	3	40.3	3	42.5	3	44.7	3	46.6	3	48.5	3	50.5	3	52.4	3	54.1	3	55.9	3	57.5	48	
	8	2	37.3	2	39.8	2	42.4	2	44.8	2	47.3	2	49.6	2	51.8	2	54.1	2	56.4	2	58.6	2	0.7	2	2.7	52	
	4	1	38.8	1	41.6	1	44.5	1	47.2	1	50.0	1	52.6	1	55.2	1	57.8	1	0.4	1	3.0	1	5.5	1	7.9	5	56
18	0	0	40.5	0	43.6	0	46.6	0	49.6	0	52.7	0	55.6	0	58.5	1	1.5	1	4.5	1	7.4	1	10.3	1	13.2	6	0

TRUE ALTITUDE OF BODY.

LATITUDE 3°.														
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.
24 0	87 0.0	86 0.0	85 0.0	84 0.0	83 0.0	82 0.0	81 0.0	80 0.0	79 0.0	78 0.0	77 0.0	76 0.0	75 0.0	0 0
23 56	86 50.2	85 52.6	84 54.1	83 55.0	82 55.7	81 56.3	80 56.7	79 57.0	78 57.3	77 57.6	76 57.7	75 57.9	74 58.0	0 4
52	86 23.6	85 31.7	84 36.9	83 40.6	82 43.3	81 45.2	80 47.0	79 48.5	78 49.2	77 50.0	76 50.9	75 51.7	74 52.1	8
48	85 45.4	85 0.0	84 10.2	83 17.5	82 23.2	81 27.4	80 30.9	79 33.9	78 36.0	77 37.9	76 39.6	75 41.1	74 42.4	12
44	85 0.1	84 20.7	83 36.0	82 47.4	81 56.5	81 3.4	80 9.4	79 14.1	78 17.9	77 21.4	76 24.3	75 26.7	74 28.9	16
40	84 10.2	83 35.9	82 55.8	82 11.5	81 24.2	80 34.0	79 42.5	78 49.5	77 55.3	77 0.5	76 4.8	75 8.6	74 11.9	20
36	83 17.6	82 47.5	82 11.5	81 31.0	80 47.2	80 0.1	79 11.3	78 20.8	77 28.6	76 35.5	75 41.5	74 46.9	73 51.7	24
32	82 23.2	81 56.4	81 24.0	80 47.0	80 6.6	79 22.5	78 36.3	77 48.4	76 58.2	76 7.0	75 14.8	74 21.9	73 28.2	28
28	81 27.5	81 3.6	80 34.1	80 0.2	79 22.4	78 41.4	77 58.0	77 12.3	76 24.6	75 35.4	74 45.2	73 53.9	73 1.6	32
24	80 31.0	80 9.2	79 42.3	79 11.2	78 36.3	77 57.9	77 17.2	76 33.5	75 48.1	75 1.1	74 12.7	73 23.0	72 32.2	36
20	79 33.8	79 14.0	78 49.4	78 20.5	77 47.9	77 12.0	76 33.4	75 52.3	75 9.0	74 24.1	73 37.6	72 49.4	72 0.5	40
16	78 36.1	78 17.8	77 55.3	77 28.5	76 58.0	76 24.3	75 48.0	75 9.1	74 27.8	73 44.8	72 59.9	72 13.9	71 26.4	44
12	77 38.2	77 21.2	77 0.3	76 35.3	76 6.9	75 35.2	75 0.9	74 24.1	73 44.6	73 3.4	72 20.5	71 36.0	70 50.3	48
8	76 39.9	76 24.1	76 4.5	75 41.2	75 14.5	74 44.8	74 12.3	73 37.3	72 59.7	72 20.4	71 39.1	70 56.3	70 12.3	52
4	75 41.3	75 26.6	75 8.2	74 46.5	74 21.4	73 53.3	73 22.5	72 49.1	72 13.4	71 35.7	70 56.2	70 15.1	69 32.4	0 56
23 0	74 42.6	74 28.8	74 11.5	73 51.0	73 27.5	73 0.8	72 31.7	71 59.9	71 25.8	70 49.7	70 11.9	69 32.2	68 51.0	1 0
22 56	73 43.7	73 30.8	73 14.6	72 55.1	72 32.8	72 7.4	71 39.8	71 9.6	70 37.0	70 2.5	69 26.1	68 48.2	68 8.4	1 4
52	72 44.7	72 32.4	72 17.2	71 58.9	71 37.6	71 13.5	70 47.1	70 18.4	69 47.3	69 14.2	68 39.2	68 2.6	67 24.4	8
48	71 45.6	71 34.0	71 19.5	71 2.0	70 42.0	70 19.0	69 53.9	69 26.5	68 56.5	68 25.0	67 51.4	67 16.1	66 39.3	12
44	70 46.4	70 35.5	70 21.5	70 5.0	69 45.8	69 24.1	69 0.1	68 33.7	68 5.2	67 34.8	67 2.5	66 28.6	65 53.0	16
40	69 47.1	69 36.7	69 23.5	69 7.6	68 49.4	68 28.6	68 5.6	67 40.5	67 13.0	66 43.8	66 12.9	65 40.2	65 5.9	20
36	68 47.8	68 37.8	68 25.3	68 10.2	67 52.6	67 32.7	67 10.8	66 46.7	66 20.4	65 52.3	65 22.5	64 50.9	64 17.9	24
32	67 48.4	67 38.7	67 26.9	67 12.5	66 55.7	66 36.6	66 15.5	65 52.4	65 27.2	65 0.2	64 31.3	64 1.0	63 29.0	28
28	66 48.9	66 39.8	66 28.3	66 14.5	65 58.5	65 40.1	65 19.8	64 57.7	64 33.4	64 7.5	63 39.7	63 10.4	62 39.5	32
24	65 49.5	65 40.7	65 29.6	65 16.4	65 1.0	64 43.4	64 24.0	64 2.5	63 39.2	63 14.2	62 47.5	62 19.2	61 49.4	36
20	64 50.0	64 41.6	64 30.8	64 18.1	64 3.2	63 46.5	63 27.8	63 7.2	62 44.6	62 20.5	61 54.7	61 27.5	60 58.6	40
16	63 50.4	63 42.3	63 32.0	63 19.7	63 5.5	62 49.2	62 31.3	62 11.5	61 49.7	61 26.3	61 1.6	60 35.1	60 7.3	44
12	62 50.8	62 42.8	62 33.1	62 21.2	62 7.5	61 51.8	61 34.5	61 15.4	60 54.5	60 32.1	60 7.9	59 42.4	59 15.4	48
8	61 51.1	61 43.5	61 34.6	61 22.7	61 9.4	60 54.3	60 37.6	60 19.1	59 59.0	59 37.3	59 14.0	58 49.2	58 23.2	52
4	60 51.5	60 44.1	60 35.0	60 23.9	60 11.2	59 56.6	59 40.4	59 22.6	59 3.1	58 42.2	58 19.7	57 55.8	57 30.4	1 56
22 0	59 51.9	59 44.7	59 35.8	59 25.2	59 12.8	58 58.8	58 43.2	58 25.9	58 7.1	57 46.8	57 25.1	57 2.0	56 37.3	2 0
21 56	58 52.2	58 45.2	58 36.6	58 26.3	58 14.4	58 0.8	57 45.7	57 29.1	57 10.8	56 51.2	56 30.1	56 7.8	55 44.0	4
52	57 52.5	57 45.7	57 37.4	57 27.4	57 15.9	57 2.7	56 48.1	56 32.0	56 14.3	55 55.3	55 34.9	55 13.2	54 50.2	8
48	56 52.7	56 46.2	56 38.1	56 28.5	56 17.2	56 4.5	55 50.4	55 34.8	55 17.7	54 59.3	54 39.4	54 18.5	53 56.1	12
44	55 53.0	55 46.6	55 38.8	55 29.4	55 18.6	55 6.2	54 52.5	54 37.5	54 20.8	54 3.0	53 43.8	53 23.4	53 1.7	16
40	54 53.3	54 47.1	54 39.4	54 30.3	54 19.8	54 7.8	53 54.6	53 39.9	53 23.8	53 6.5	52 47.9	52 28.1	52 7.2	20
36	53 53.5	53 47.4	53 40.0	53 31.2	53 21.0	53 9.4	52 56.5	52 42.2	52 26.7	52 9.9	51 51.8	51 32.7	51 12.3	24
32	52 53.8	52 47.9	52 40.5	52 32.0	52 22.1	52 10.8	51 58.3	51 44.5	51 29.3	51 13.1	50 55.7	50 37.0	50 17.2	28
28	51 54.0	51 48.2	51 41.2	51 32.8	51 23.2	51 12.1	51 0.0	50 46.7	50 31.9	50 16.2	49 59.2	49 41.1	49 21.8	32
24	50 54.2	50 48.6	50 41.7	50 33.6	50 24.1	50 13.5	50 1.7	49 48.7	49 34.5	49 19.1	49 2.6	48 45.0	48 26.3	36
20	49 54.4	49 48.9	49 42.2	49 34.2	49 25.0	49 14.7	49 3.3	48 50.7	48 36.8	48 21.9	48 5.8	47 48.8	47 30.6	40
16	48 54.6	48 49.2	48 42.6	48 35.0	48 26.0	48 15.9	48 4.8	47 52.5	47 39.0	47 24.5	47 9.0	46 52.4	46 34.8	44
12	47 54.8	47 49.5	47 43.1	47 35.6	47 26.9	47 17.1	47 6.3	46 54.3	46 41.2	46 27.1	46 11.9	45 55.9	45 38.8	48
8	46 55.0	46 49.8	46 43.5	46 36.2	46 27.8	46 18.2	46 7.6	45 56.0	45 43.3	45 29.6	45 14.9	44 59.2	44 42.7	52
4	45 55.1	45 50.0	45 44.0	45 36.8	45 28.6	45 19.2	45 9.0	44 57.7	44 45.3	44 32.0	44 17.7	44 2.5	43 46.3	2 56
21 0	44 55.3	44 50.3	44 44.4	44 37.4	44 29.4	44 20.2	44 10.3	43 59.2	43 47.2	43 34.3	43 20.4	43 5.6	42 49.9	3 0

LATITUDE 3°.													
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	74 0 0	73 0 0	72 0 0	71 0 0	70 0 0	69 0 0	68 0 0	67 0 0	66 0 0	65 0 0	64 0 0	63 0 0	0 0
23 56	73 58.1	72 58.1	71 58.4	70 58.4	69 58.5	68 58.6	67 58.6	66 58.6	65 58.9	64 58.8	63 58.9	62 59.0	4
52	73 52.5	72 52.8	71 53.5	70 53.8	69 54.2	68 54.5	67 54.5	66 54.9	65 55.3	64 55.5	63 55.7	62 55.8	8
48	73 43.4	72 44.2	71 45.4	70 46.2	69 46.9	68 47.5	67 48.0	66 48.7	65 49.4	64 49.8	63 50.2	62 50.6	12
44	73 30.9	72 32.4	71 34.3	70 35.6	69 36.8	68 38.0	67 38.8	66 39.9	65 41.0	64 41.7	63 42.6	62 43.3	16
40	73 14.9	72 17.4	71 20.0	70 22.1	69 24.1	68 25.7	67 27.3	66 28.8	65 30.3	64 31.6	63 32.8	62 33.9	20
36	72 55.6	71 59.3	71 2.8	70 5.9	69 8.6	68 10.9	67 13.2	66 15.3	65 17.5	64 19.2	63 20.9	62 22.6	24
32	72 33.4	71 38.0	70 42.8	69 46.8	68 50.5	67 53.7	66 56.6	65 59.6	65 2.5	64 4.8	63 7.1	62 9.3	28
28	72 8.2	71 14.3	70 20.0	69 25.3	68 30.0	67 34.1	66 38.0	65 41.6	64 45.2	63 48.3	62 51.3	61 53.9	32
24	71 40.4	70 47.8	69 55.0	69 1.3	68 7.0	67 12.3	66 17.0	65 21.5	64 25.9	63 29.8	62 33.5	61 36.9	36
20	71 10.1	70 19.0	69 27.5	68 34.9	67 41.9	66 48.1	65 53.9	64 59.4	64 4.7	63 9.3	62 13.8	61 18.0	40
16	70 37.6	69 48.0	68 57.8	68 6.5	67 14.6	66 21.9	65 28.8	64 35.3	63 41.5	62 47.1	61 52.4	60 57.3	44
12	70 3.1	69 14.7	68 26.0	67 36.0	66 45.4	65 53.9	65 1.8	64 9.3	63 16.5	62 23.0	61 29.1	60 35.0	48
8	69 26.5	68 39.8	67 52.3	67 3.7	66 14.3	65 24.0	64 33.0	63 41.6	62 49.8	61 57.2	61 4.4	60 11.0	52
4	68 48.3	68 3.0	67 16.9	66 29.6	65 41.5	64 52.3	64 2.5	63 12.2	62 21.4	61 29.9	60 37.9	59 45.5	0 56
23 0	68 8.4	67 24.5	66 39.9	65 53.9	65 6.9	64 19.1	63 30.4	62 41.2	61 51.5	61 0.9	60 10.0	59 18.5	1 0
22 56	67 27.1	66 44.6	66 1.3	65 16.7	64 31.0	63 44.3	62 56.8	62 8.8	61 20.1	60 30.6	59 40.6	58 50.0	4
52	66 44.6	66 3.4	65 21.3	64 38.0	63 53.6	63 8.1	62 21.8	61 34.8	60 47.3	59 58.8	59 8.5	58 20.2	8
48	66 0.8	65 20.9	64 40.1	63 58.0	63 14.9	62 30.7	61 45.5	60 59.6	60 13.1	59 25.7	58 37.7	57 49.1	12
44	65 15.8	64 37.3	63 57.8	63 16.8	62 35.0	61 51.8	61 7.9	60 23.1	59 37.7	58 51.3	58 4.4	57 16.7	16
40	64 29.9	63 52.6	63 14.3	62 34.7	61 53.9	61 12.0	60 29.1	59 45.4	59 1.1	58 15.8	57 29.8	56 43.1	20
36	63 43.1	63 6.9	62 29.9	61 51.4	61 11.8	60 30.9	59 49.2	59 6.6	58 23.4	57 39.1	56 54.1	56 8.5	24
32	62 55.4	62 20.5	61 44.5	61 7.2	60 28.7	59 49.0	59 8.3	58 26.8	57 44.6	57 1.4	56 17.4	55 32.7	28
28	62 7.1	61 33.2	60 58.4	60 22.0	59 44.7	59 6.1	58 26.5	57 46.0	57 4.9	56 22.6	55 39.7	54 56.0	32
24	61 17.9	60 45.2	60 11.4	59 36.2	58 59.8	58 22.3	57 43.7	57 4.4	56 24.2	55 42.9	55 1.0	54 18.3	36
20	60 28.1	59 56.4	59 23.6	58 49.5	58 14.1	57 37.6	57 0.2	56 21.8	55 42.6	55 2.4	54 21.4	53 39.7	40
16	59 37.8	59 7.0	58 35.3	58 2.1	57 27.8	56 52.4	56 15.8	55 38.4	55 0.4	54 21.0	53 41.0	53 0.2	44
12	58 47.0	58 17.1	57 46.3	57 14.0	56 40.8	56 6.3	55 30.8	54 54.4	54 17.1	53 38.9	52 59.8	52 19.9	48
8	57 55.5	57 26.7	56 56.7	56 23.5	55 53.1	55 19.6	54 45.1	54 9.6	53 33.3	52 55.9	52 17.9	51 38.9	52
4	57 3.7	56 35.6	56 6.7	55 36.4	55 4.8	54 32.3	53 58.6	53 24.1	52 48.7	52 12.3	51 35.1	50 57.2	1 56
22 0	56 11.4	55 44.3	55 16.1	54 46.7	54 16.2	53 44.3	53 11.6	52 38.0	52 3.6	51 28.0	50 51.8	50 14.7	2 0
21 56	55 18.8	54 52.4	54 25.1	53 56.5	53 26.8	52 55.9	52 24.0	51 51.3	51 17.7	50 43.2	50 7.8	49 31.6	4
52	54 25.8	54 0.2	53 33.7	53 5.9	52 37.0	52 7.0	51 36.0	51 4.0	50 31.4	49 57.7	49 23.2	48 47.8	8
48	53 32.4	53 7.7	52 41.9	52 14.8	51 46.7	51 17.6	50 47.4	50 16.4	49 44.5	49 11.7	48 38.0	48 3.5	12
44	52 38.8	52 14.7	51 49.7	51 23.4	50 56.1	50 27.7	49 58.4	49 28.2	48 57.2	48 25.0	47 52.3	47 18.6	16
40	51 44.9	51 21.4	50 57.1	50 31.7	50 5.1	49 37.4	49 8.9	48 39.5	48 9.3	47 38.1	47 6.0	46 33.2	20
36	50 50.6	50 27.9	50 4.3	49 39.4	49 13.8	48 46.8	48 19.0	47 50.3	47 21.0	46 50.5	46 19.4	45 47.3	24
32	49 56.1	49 34.0	49 11.1	48 47.0	48 22.0	47 55.9	47 28.7	47 0.8	46 32.2	46 2.6	45 32.2	45 0.9	28
28	49 1.5	48 39.9	48 17.7	47 54.3	47 29.9	47 4.5	46 38.2	46 11.0	45 43.1	45 14.2	44 44.5	44 14.1	32
24	48 6.5	47 45.8	47 24.0	47 1.2	46 37.5	46 12.8	45 47.2	45 20.8	44 53.6	44 25.4	43 56.5	43 26.9	36
20	47 11.4	46 51.1	46 30.1	46 7.9	45 44.9	45 20.8	44 55.9	44 30.2	44 3.7	43 36.3	43 8.1	42 39.2	40
16	46 16.1	45 56.4	45 35.9	45 14.5	44 52.0	44 28.5	44 4.3	43 39.2	43 13.5	42 46.8	42 19.4	41 51.2	44
12	45 20.6	45 1.4	44 41.6	44 20.6	43 58.9	43 36.1	43 12.4	42 48.0	42 23.0	41 57.0	41 30.3	41 2.8	48
8	44 24.9	44 6.3	43 46.9	43 26.7	43 5.4	42 43.3	42 20.3	41 56.5	41 32.2	41 6.8	40 40.9	40 14.1	52
4	43 29.1	43 11.0	42 52.2	42 32.4	42 11.8	41 50.2	41 27.9	41 4.8	40 41.1	40 16.4	39 51.1	39 25.0	2 56
21 0	42 33.1	42 15.6	41 57.3	41 38.0	41 17.9	40 57.0	40 35.2	40 12.8	39 49.7	39 25.7	39 1.0	38 35.6	3 0

LATITUDE 3°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
15 0	21 0	44 55.3	44 50.3	44 44.4	44 37.4	44 29.4	44 20.2	44 10.3	43 59.2	43 47.2	43 34.3	43 20.4	43 5.6	42 49.9	3 0	9 0	
4	20 56	43 55.5	43 50.6	43 44.7	43 37.9	43 30.1	43 21.2	43 11.5	43 0.8	42 49.1	42 36.5	42 23.0	42 8.6	41 53.2	4	8 56	
8	52	42 55.6	42 50.8	42 45.1	42 38.4	42 30.8	42 22.1	42 12.7	42 2.3	41 50.8	41 38.6	41 25.5	41 11.5	40 56.6	8	52	
12	48	41 55.8	41 51.1	41 45.4	41 38.9	41 31.4	41 23.0	41 13.8	41 3.7	40 52.5	40 40.7	40 27.8	40 14.3	39 59.8	12	48	
16	44	40 55.9	40 51.3	40 45.8	40 39.3	40 32.2	40 23.9	40 14.9	40 4.9	39 54.2	39 42.6	39 30.2	39 17.0	39 2.9	16	44	
20	40	39 56.0	39 51.5	39 46.1	39 39.9	39 32.7	39 24.8	39 15.9	39 6.3	38 55.8	38 44.5	38 32.4	38 19.5	38 5.9	20	40	
24	36	38 56.2	38 51.6	38 46.4	38 40.3	38 33.4	38 25.5	38 17.0	38 7.6	37 57.3	37 46.4	37 34.6	37 22.1	37 8.8	24	36	
28	32	37 56.3	37 51.9	37 46.7	37 40.8	37 33.9	37 26.4	37 18.0	37 8.9	36 58.9	36 48.2	36 36.7	36 24.5	36 11.6	28	32	
32	28	36 56.4	36 52.1	36 47.0	36 41.1	36 34.5	36 27.0	36 19.0	36 10.0	36 0.3	35 49.9	35 39.7	35 26.9	35 14.4	32	28	
36	24	35 56.6	35 52.3	35 47.3	35 41.6	35 35.0	35 27.8	35 19.9	35 11.2	35 1.7	34 51.6	34 40.7	34 29.2	34 17.0	36	24	
40	20	34 56.7	34 52.5	34 47.6	34 41.9	34 35.6	34 28.5	34 20.7	34 12.3	34 3.1	33 53.2	33 42.6	33 31.5	33 19.5	40	20	
44	16	33 56.8	33 52.7	33 47.8	33 42.3	33 36.1	33 29.1	33 21.6	33 13.3	33 4.4	32 54.8	32 44.5	32 33.7	32 22.1	44	16	
48	12	32 57.0	32 52.8	32 48.1	32 42.7	32 36.6	32 29.8	32 22.4	32 14.4	32 5.6	31 56.3	31 46.4	31 35.7	31 24.5	48	12	
52	8	31 57.1	31 53.0	31 48.4	31 43.0	31 37.1	31 30.4	31 23.2	31 15.4	31 6.9	30 57.8	30 48.1	30 37.8	30 26.9	52	8	
15 56	4	30 57.2	30 53.2	30 48.6	30 43.3	30 37.6	30 31.0	30 24.1	30 16.4	30 8.1	29 59.2	29 49.8	29 39.8	29 29.2	3 56	4	
16 0	20 0	29 57.3	29 53.3	29 48.8	29 43.7	29 38.0	29 31.7	29 24.8	29 17.4	29 9.2	29 0.7	28 51.4	28 41.7	28 31.5	4 0	8 0	
4	19 56	28 57.4	28 53.5	28 49.0	28 44.0	28 38.5	28 32.2	28 25.6	28 18.3	28 10.4	28 2.0	27 53.1	27 43.6	27 33.7	4	7 56	
8	52	27 57.5	27 53.6	27 49.2	27 44.4	27 38.9	27 32.8	27 26.2	27 19.2	27 11.5	27 3.4	26 54.6	26 45.6	26 35.8	8	52	
12	48	26 57.6	26 53.7	26 49.5	26 44.7	26 39.3	26 33.3	26 27.0	26 20.1	26 12.6	26 4.7	25 56.3	25 47.3	25 37.9	12	48	
16	44	25 57.7	25 53.9	25 49.7	25 44.9	25 39.7	25 33.9	25 27.6	25 21.0	25 13.6	25 6.0	24 57.8	24 49.1	24 39.9	16	44	
20	40	24 57.8	24 54.1	24 49.9	24 45.2	24 40.0	24 34.4	24 28.4	24 21.8	24 14.7	24 7.2	23 59.3	23 50.8	23 42.0	20	40	
24	36	23 57.9	23 54.2	23 50.0	23 45.5	23 40.4	23 34.9	23 29.0	23 22.7	23 15.7	23 8.4	23 0.7	22 52.6	22 44.0	24	36	
28	32	22 58.0	22 54.3	22 50.3	22 45.7	22 40.8	22 35.4	22 29.6	22 23.5	22 16.7	22 9.6	22 2.1	21 54.2	21 45.9	28	32	
32	28	21 58.1	21 54.5	21 50.5	21 46.0	21 41.2	21 35.9	21 30.3	21 24.2	21 17.7	21 10.8	21 3.5	20 55.8	20 47.8	32	28	
36	24	20 58.2	20 54.6	20 50.7	20 46.3	20 41.6	20 36.4	20 30.9	20 24.9	20 18.6	20 11.9	20 4.9	19 57.4	19 49.6	36	24	
40	20	19 58.3	19 54.7	19 50.8	19 46.6	19 41.9	19 36.8	19 31.5	19 25.7	19 19.5	19 13.0	19 6.2	18 59.0	18 51.4	40	20	
44	16	18 58.4	18 54.8	18 51.0	18 46.8	18 42.2	18 37.3	18 32.0	18 26.4	18 20.4	18 14.1	18 7.5	18 0.6	17 53.3	44	16	
48	12	17 58.5	17 55.0	17 51.2	17 47.0	17 42.5	17 37.7	17 32.6	17 27.2	17 21.8	17 15.2	17 8.8	17 2.0	16 55.0	48	12	
52	8	16 58.6	16 55.1	16 51.3	16 47.2	16 42.9	16 38.1	16 33.1	16 27.9	16 22.2	16 16.3	16 10.0	16 3.5	15 56.7	52	8	
16 56	4	15 58.6	15 55.2	15 51.5	15 47.5	15 43.2	15 38.5	15 33.7	15 28.6	15 23.1	15 17.3	15 11.3	15 5.0	14 58.4	4 56	4	
17 0	19 0	14 58.7	14 55.3	14 51.7	14 47.7	14 43.5	14 39.0	14 34.2	14 29.2	14 23.9	14 18.3	14 12.4	14 6.4	14 0.1	5 0	7 0	
4	18 56	13 58.8	13 55.4	13 51.8	13 48.0	13 43.8	13 39.4	13 34.8	13 29.9	13 24.7	13 19.3	13 13.7	13 7.8	13 1.7	4	6 56	
8	52	12 58.9	12 55.5	12 52.0	12 48.2	12 44.1	12 39.8	12 35.3	12 30.5	12 25.5	12 20.3	12 14.9	12 9.2	12 3.4	8	52	
12	48	11 59.0	11 55.6	11 52.1	11 48.4	11 44.4	11 40.2	11 35.8	11 31.2	11 26.3	11 21.2	11 16.0	11 10.6	11 4.9	12	48	
16	44	10 59.1	10 55.8	10 52.2	10 48.6	10 44.7	10 40.5	10 36.3	10 31.8	10 27.1	10 22.2	10 17.2	10 11.9	10 6.5	16	44	
20	40	9 59.2	9 55.9	9 52.4	9 48.8	9 44.9	9 40.9	9 36.8	9 32.5	9 27.8	9 23.2	9 18.3	9 13.2	9 8.0	20	40	
24	36	8 59.3	8 56.0	8 52.5	8 49.0	8 45.2	8 41.3	8 37.2	8 33.1	8 28.6	8 24.1	8 19.4	8 14.5	8 9.6	24	36	
28	32	7 59.4	7 56.1	7 52.7	7 49.1	7 45.5	7 41.6	7 37.7	7 33.7	7 29.4	7 25.0	7 20.4	7 15.9	7 11.1	28	32	
32	28	6 59.4	6 56.2	6 52.8	6 49.4	6 45.7	6 42.0	6 38.2	6 34.2	6 30.1	6 25.9	6 21.6	6 17.1	6 12.6	32	28	
36	24	5 59.5	5 56.2	5 53.0	5 49.5	5 46.0	5 42.3	5 38.6	5 34.8	5 30.8	5 26.8	5 22.6	5 18.4	5 14.1	36	24	
40	20	4 59.6	4 56.3	4 53.1	4 49.7	4 46.3	4 42.7	4 39.0	4 35.4	4 31.5	4 27.6	4 23.7	4 19.7	4 15.6	40	20	
44	16	3 59.7	3 56.4	3 53.2	3 49.9	3 46.5	3 43.0	3 39.5	3 35.9	3 32.2	3 28.5	3 24.7	3 20.9	3 17.0	44	16	
48	12	2 59.8	2 56.6	2 53.3	2 50.1	2 46.7	2 43.3	2 39.9	2 36.5	2 32.9	2 29.3	2 25.7	2 22.1	2 18.4	48	12	
52	8	1 59.9	1 56.7	1 53.5	1 50.2	1 47.0	1 43.7	1 40.3	1 37.1	1 33.6	1 30.2	1 26.7	1 23.3	1 19.8	52	8	
17 56	4	0 59.9	0 56.8	0 53.6	0 50.4	0 47.2	0 44.0	0 40.8	0 37.6	0 34.3	0 31.0	0 27.7	0 24.5	0 21.3	5 56	4	
18 0	18 0	0 0.0	0 3.1	0 6.3	0 9.4	0 12.6	0 15.6	0 18.8	0 21.9	0 25.0	0 28.2	0 31.2	0 34.3	0 37.4	6 0	6 0	

2

The heavy zigzag line is the last line of the table.

LATITUDE 3°.																
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.		
		Declination														
Same Name.		Contrary Name	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.
h. m.	h. m.		° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.
15 0	21 0		42 33.1	42 15.6	41 57.3	41 38.0	41 17.9	40 57.0	40 35.2	40 12.8	39 49.7	39 25.7	39 1.0	38 35.6	3 0	9 0
4	20 56		41 37.0	41 19.9	41 2.1	40 43.4	40 23.9	40 3.5	39 42.4	39 20.5	38 58.1	38 34.7	38 10.6	37 46.0	4	8 56
8	52		40 40.8	40 24.2	40 6.8	39 48.7	39 29.7	39 9.9	38 49.3	38 28.1	38 6.2	37 43.5	37 20.1	36 56.0	8	52
12	48		39 44.4	39 28.2	39 11.5	38 53.7	38 35.3	38 16.0	37 56.0	37 35.3	37 14.1	36 51.9	36 29.3	36 5.8	12	48
16	44		38 47.9	38 32.2	38 15.9	37 58.7	37 40.8	37 22.0	37 2.5	36 42.4	36 21.7	36 0.3	35 38.1	35 15.4	16	44
20	40		37 51.3	37 36.1	37 20.2	37 3.5	36 46.1	36 27.8	36 8.9	35 49.3	35 29.2	35 8.3	34 46.8	34 24.6	20	40
24	36		36 54.6	36 39.8	36 24.4	36 8.1	35 51.1	35 33.4	35 15.0	34 56.1	34 36.5	34 16.2	33 55.3	33 33.7	24	36
28	32		35 57.9	35 43.4	35 28.4	35 12.6	34 56.1	34 38.9	34 21.1	34 2.6	33 43.6	33 23.8	33 3.5	32 42.5	28	32
32	28		35 1.0	34 47.0	34 32.4	34 17.0	34 1.0	33 44.3	33 26.9	33 9.0	32 50.5	32 31.3	32 11.5	31 51.2	32	28
36	24		34 4.0	33 50.3	33 36.2	33 21.3	33 5.7	32 49.5	32 32.6	32 15.2	31 57.2	31 38.6	31 19.4	30 59.6	36	24
40	20		33 6.9	32 53.6	32 39.9	32 25.4	32 10.3	31 54.6	31 38.2	31 21.2	31 3.8	30 45.7	30 27.1	30 7.9	40	20
44	16		32 9.7	31 56.9	31 43.6	31 29.5	31 14.9	30 59.5	30 43.6	30 27.2	30 10.3	29 52.7	29 34.6	29 15.9	44	16
48	12		31 12.6	31 0.0	30 47.2	30 33.5	30 19.2	30 4.3	29 48.9	29 32.9	29 16.6	28 59.5	28 41.9	28 23.8	48	12
52	8		30 15.3	30 3.1	29 50.6	29 37.3	29 23.5	29 9.0	28 54.1	28 38.6	28 22.7	28 6.2	27 49.1	27 31.6	52	8
15 56	4		29 17.9	29 6.2	28 54.0	28 41.0	28 27.7	28 13.7	27 59.1	27 44.1	27 28.8	27 12.7	26 56.2	26 39.1	3 56	4
16 0	20 0		28 20.6	28 9.1	27 57.2	27 44.7	27 31.7	27 18.2	27 4.1	26 49.6	26 34.6	26 19.1	26 3.1	25 46.6	4 0	8 0
4	19 56		27 23.1	27 12.0	27 0.4	26 48.4	26 35.8	26 22.6	26 9.0	25 54.9	25 40.4	25 25.3	25 9.8	24 53.8	4	7 56
8	52		26 25.5	26 14.7	26 3.6	25 51.9	25 39.7	25 27.0	25 13.7	25 0.1	24 46.1	24 31.5	24 16.5	24 1.0	8	52
12	48		25 27.9	25 17.5	25 6.7	24 55.4	24 43.5	24 31.2	24 18.4	24 5.1	23 51.6	23 37.5	23 23.0	23 8.0	12	48
16	44		24 30.3	24 20.1	24 9.7	23 58.7	23 47.3	23 35.3	23 22.9	23 10.2	22 57.0	22 43.4	22 29.4	22 15.0	16	44
20	40		23 32.6	23 22.8	23 12.7	23 2.0	22 51.0	22 39.4	22 27.4	22 15.0	22 2.4	21 49.2	21 35.7	21 21.8	20	40
24	36		22 34.9	22 25.3	22 15.6	22 5.3	21 54.6	21 43.4	21 31.8	21 19.9	21 7.7	20 55.0	20 41.9	20 28.4	24	36
28	32		21 37.1	21 27.9	21 18.4	21 8.5	20 58.1	20 47.3	20 36.1	20 24.7	20 12.8	20 0.6	19 48.0	19 34.9	28	32
32	28		20 39.3	20 30.3	20 21.2	20 11.6	20 1.6	19 51.1	19 40.4	19 29.3	19 18.0	19 6.1	18 53.9	18 41.4	32	28
36	24		19 41.4	19 32.8	19 23.9	19 14.6	19 5.0	18 55.0	18 44.6	18 33.9	18 23.0	18 11.5	17 59.9	17 47.8	36	24
40	20		18 43.5	18 35.1	18 26.6	18 17.6	18 8.4	17 58.7	17 48.7	17 38.4	17 27.8	17 16.9	17 5.7	16 54.1	40	20
44	16		17 45.5	17 37.5	17 29.3	17 20.6	17 11.7	17 2.4	16 52.7	16 42.8	16 32.7	16 22.2	16 11.4	16 0.4	44	16
48	12		16 47.5	16 39.8	16 31.9	16 23.6	16 15.0	16 6.0	15 56.7	15 47.2	15 37.5	15 27.4	15 17.1	15 6.4	48	12
52	8		15 49.5	15 42.1	15 34.4	15 26.5	15 18.2	15 9.5	15 0.6	14 51.6	14 42.2	14 32.6	14 22.7	14 12.5	52	8
16 56	4		14 51.5	14 44.3	14 37.0	14 29.3	14 21.3	14 13.0	14 4.6	13 55.8	13 47.0	13 37.6	13 28.2	13 18.4	4 56	4
17 0	19 0		13 53.4	13 46.5	13 39.5	13 32.1	13 24.4	13 16.5	13 8.4	13 0.1	12 51.5	12 42.7	12 33.6	12 24.3	5 0	7 0
4	18 56		12 55.3	12 48.6	12 41.9	12 34.8	12 27.6	12 19.9	12 12.2	12 4.2	11 56.1	11 47.6	11 39.0	11 30.1	4	6 56
8	52		11 57.1	11 50.8	11 44.3	11 37.6	11 30.6	11 23.4	11 15.9	11 8.3	11 0.6	10 52.6	10 44.3	10 36.0	8	52
12	48		10 59.0	10 52.9	10 46.7	10 40.2	10 33.6	10 26.7	10 19.6	10 12.3	10 5.0	9 57.3	9 49.6	9 41.7	12	48
16	44		10 0.8	9 55.0	9 49.1	9 42.9	9 36.6	9 30.0	9 23.3	9 16.4	9 9.4	9 2.2	8 54.8	8 47.3	16	44
20	40		9 2.6	8 57.0	8 51.4	8 45.5	8 39.5	8 33.2	8 26.8	8 20.3	8 13.8	8 6.9	8 0.0	7 52.9	20	40
24	36		8 4.4	7 59.1	7 53.7	7 48.1	7 42.4	7 36.5	7 30.4	7 24.3	7 18.1	7 11.7	7 5.1	6 58.5	24	36
28	32		7 6.1	7 1.0	6 56.0	6 50.7	6 45.3	6 39.7	6 34.0	6 28.2	6 22.4	6 16.3	6 10.2	6 3.9	28	32
32	28		6 7.9	6 3.0	5 58.2	5 53.2	5 48.1	5 42.9	5 37.5	5 32.1	5 26.6	5 21.0	5 15.3	5 9.4	32	28
36	24		5 9.6	5 5.0	5 0.4	4 55.7	4 51.0	4 46.0	4 41.0	4 35.9	4 30.8	4 25.6	4 20.3	4 14.9	36	24
40	20		4 11.2	4 6.9	4 2.6	3 58.2	3 53.7	3 49.1	3 44.5	3 39.8	3 35.0	3 30.1	3 25.3	3 20.3	40	20
44	16		3 13.0	3 8.8	3 4.9	3 0.7	2 56.5	2 52.2	2 47.9	2 43.5	2 39.2	2 34.7	2 30.2	2 25.6	44	16
48	12		2 14.6	2 10.8	2 7.0	2 3.2	1 59.3	1 55.2	1 51.2	1 47.2	1 43.3	1 39.2	1 35.1	1 31.0	48	12
52	8		1 16.3	1 12.7	1 9.2	1 5.6	1 2.0	0 58.3	0 54.6	0 51.0	0 47.4	0 43.7	0 40.0	0 36.3	52	8
17 56	4		0 17.9	0 14.6	0 11.4	0 8.1	0 4.7	0 1.3	0 2.0	0 5.3	0 8.5	0 11.8	0 15.1	0 18.5	5 56	4
18 0	18 0		0 40.5	0 43.6	0 46.6	0 49.6	0 52.7	0 55.6	0 58.6	1 1.5	1 4.5	1 7.4	1 10.3	1 13.2	6 0	6 0

LATITUDE 4°.																			
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.														Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°					
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	86	0.0	87	0.0	88	0.0	89	0.0	90	0.0	89	0.0	88	0.0	87	0.0	0	0
23	56	85	52.6	86	50.2	87	45.9	88	35.2	89	0.1	88	35.3	87	46.0	86	50.4	0	4
	52	85	31.7	86	23.8	87	10.4	87	46.1	88	0.3	87	46.1	87	10.6	86	24.0		8
	48	85	0.1	85	45.6	86	23.8	86	50.6	87	0.4	86	50.8	86	24.3	85	46.0		12
	44	84	20.7	85	0.2	85	32.0	85	53.0	86	0.6	85	53.3	85	32.5	85	0.8		16
	40	83	36.0	84	10.4	84	37.3	84	54.6	85	0.7	84	55.0	84	37.9	84	11.3		20
	36	82	47.5	83	17.8	83	41.0	83	55.6	84	0.8	83	56.2	83	41.8	83	19.0		24
	32	81	56.5	82	23.5	82	43.7	82	56.5	83	1.0	82	57.1	82	44.8	82	24.8		28
	28	81	3.6	81	27.8	81	45.8	81	57.1	82	1.1	81	57.8	81	46.9	81	29.4		32
	24	80	9.4	80	31.3	80	47.6	80	57.7	81	1.3	80	58.3	80	48.8	80	33.1		36
	20	79	14.2	79	34.1	79	49.0	79	58.1	80	1.4	79	58.9	79	50.4	79	36.3		40
	16	78	18.2	78	36.5	78	50.0	78	58.4	79	1.6	78	59.3	78	51.6	78	38.8		44
	12	77	21.6	77	38.5	77	51.1	77	58.8	78	1.7	77	59.7	77	52.8	77	40.9		48
	8	76	24.5	76	40.2	76	51.9	76	59.1	77	1.8	77	0.1	76	53.9	76	43.1		52
	4	75	27.0	75	41.7	75	52.7	75	59.5	76	2.0	76	0.6	75	54.8	75	44.8		56
23	0	74	29.3	74	43.1	74	53.3	74	59.8	75	2.3	75	1.0	74	55.5	74	46.2	1	0
22	56	73	31.2	73	44.3	73	53.8	74	0.0	74	2.5	74	1.4	73	56.2	73	47.6		4
	52	72	33.0	72	45.3	72	54.4	73	0.2	73	2.5	73	1.6	72	56.9	72	48.8		8
	48	71	34.5	71	46.2	71	54.9	72	0.4	72	2.5	72	1.8	71	57.6	71	50.1		12
	44	70	35.9	70	47.1	70	55.4	71	0.6	71	2.7	71	2.0	70	58.1	70	51.3		16
	40	69	37.2	69	47.8	69	55.7	70	0.8	70	2.9	70	2.4	69	58.7	69	52.2		20
	36	68	38.4	68	48.5	68	56.1	69	1.0	69	3.1	69	2.7	68	59.2	68	53.0		24
	32	67	39.5	67	49.2	67	56.5	68	1.2	68	3.3	68	2.9	67	59.7	67	54.0		28
	28	66	40.4	66	49.7	66	56.8	67	1.4	67	3.4	67	3.1	66	60.6	66	47.1		32
	24	65	41.3	65	50.3	65	57.1	66	1.5	66	3.6	66	3.4	65	61.5	65	55.5		36
	20	64	42.1	64	50.8	64	57.3	65	1.7	65	3.8	65	3.7	64	62.5	64	56.3		40
	16	63	42.9	63	51.3	63	57.6	64	1.8	64	3.8	64	3.9	63	63.5	63	57.0		44
	12	62	43.6	62	51.8	62	57.9	63	2.0	63	4.0	63	4.0	62	64.5	62	57.8		48
	8	61	44.3	61	52.2	61	58.2	62	2.2	62	4.1	62	4.3	61	65.4	61	58.4		52
	4	60	44.9	60	52.6	60	58.4	61	2.4	61	4.3	61	4.5	60	66.3	60	58.9	1	56
22	0	59	45.6	59	53.0	59	58.6	60	2.4	60	4.5	60	4.8	59	67.2	59	60.0	2	0
21	56	58	46.1	58	53.3	58	58.8	59	2.6	59	4.6	59	5.0	58	68.1	58	61.3		4
	52	57	46.6	57	53.6	57	59.0	58	2.8	58	4.8	58	5.3	57	69.0	57	62.3		8
	48	56	47.1	56	54.0	56	59.2	57	2.9	57	5.0	57	5.5	56	69.9	56	63.2		12
	44	55	47.6	55	54.3	55	59.4	56	3.1	56	5.1	56	5.7	55	70.8	55	64.1		16
	40	54	48.1	54	54.6	54	59.6	55	3.2	55	5.3	55	5.9	54	71.7	54	65.0		20
	36	53	48.5	53	54.9	53	59.8	54	3.4	54	5.4	54	6.2	53	72.6	53	65.9		24
	32	52	48.9	52	55.1	53	0.0	53	3.6	53	5.6	53	6.3	52	73.5	52	66.8		28
	28	51	49.3	51	55.4	52	0.2	52	3.7	52	5.7	52	6.6	51	74.4	51	67.7		32
	24	50	49.6	50	55.7	51	0.4	51	3.8	51	5.9	51	6.8	50	75.3	50	68.6		36
	20	49	50.0	49	55.9	50	0.5	50	4.0	50	6.0	50	7.0	49	76.2	49	69.5		40
	16	48	50.4	48	56.1	49	0.8	49	4.1	49	6.2	49	7.3	48	77.1	48	70.4		44
	12	47	50.7	47	56.4	48	0.9	48	4.2	48	6.4	48	7.5	47	78.0	47	71.3		48
	8	46	51.0	46	56.5	47	1.0	47	4.4	47	6.6	47	7.8	46	78.9	46	72.2		52
	4	45	51.3	45	56.8	46	1.2	46	4.6	46	6.8	46	8.0	45	79.8	45	73.1	2	56
21	0	44	51.6	44	57.0	45	1.4	45	4.7	45	6.9	45	8.2	44	80.7	44	74.0	3	0

LATITUDE 4°.

Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	73 0 0	72 0 0	71 0 0	70 0 0	0 0
23 56	80 56 8	79 57 1	78 57 2	77 57 7	76 57 8	75 58 0	74 58 2	73 58 1	72 58 2	71 58 4	70 58 5	69 58 6	4
52	80 47 1	79 48 5	78 49 5	77 50 3	76 51 2	75 52 0	74 52 5	73 52 9	72 53 2	71 53 9	70 54 2	69 54 5	8
48	80 31 4	79 34 3	78 36 7	77 38 7	76 40 3	75 41 7	74 42 9	73 43 9	72 44 9	71 46 1	70 46 8	69 47 6	12
44	80 10 1	79 15 2	78 19 0	77 22 4	76 25 3	75 27 8	74 30 0	73 31 7	72 33 5	71 35 2	70 36 7	69 38 0	16
40	79 44 0	78 51 3	77 56 9	77 1 9	76 6 3	75 10 2	74 13 8	73 16 3	72 19 0	71 21 6	70 23 7	69 25 7	20
36	79 13 5	78 23 2	77 30 9	76 37 7	75 43 7	74 49 2	73 53 8	72 57 7	72 1 5	71 5 1	70 8 2	69 10 8	24
32	78 39 1	77 51 3	77 1 1	76 10 1	75 17 8	74 24 9	73 31 1	72 36 2	71 41 1	70 45 8	69 49 9	68 53 5	28
28	78 1 4	77 15 9	76 28 2	75 39 3	74 48 8	73 57 6	73 5 3	72 12 0	71 18 2	70 24 0	69 29 2	68 33 8	32
24	77 20 9	76 37 8	75 52 4	75 5 6	74 17 2	73 27 6	72 36 8	71 45 1	70 52 8	69 59 9	69 6 1	68 11 9	36
20	76 38 1	75 57 5	75 14 1	74 29 5	73 42 9	72 55 1	72 6 1	71 15 7	70 24 8	69 33 4	68 40 9	67 47 7	40
16	75 53 4	75 14 9	74 33 9	73 50 9	73 6 3	72 20 5	71 33 0	70 44 3	69 54 8	69 4 7	68 13 6	67 21 7	44
12	75 7 0	74 30 6	73 51 4	73 10 6	72 27 8	71 48 6	70 57 9	70 10 8	69 22 7	68 34 1	67 44 3	66 53 6	48
8	74 19 1	73 44 6	73 7 4	72 28 4	71 47 4	71 4 9	70 20 9	69 35 4	68 48 9	68 1 6	67 13 0	66 23 8	52
4	73 30 0	72 57 2	72 21 9	71 44 7	71 5 4	70 24 6	69 42 2	68 58 3	68 13 4	67 27 4	66 40 3	65 52 2	0 56
23 0	72 39 8	72 8 9	71 35 1	70 59 6	70 22 0	69 42 8	69 2 0	68 19 6	67 36 0	66 51 7	66 5 9	65 19 1	1 0
22 56	71 48 7	71 19 3	70 47 2	70 13 2	69 37 3	68 59 7	68 20 4	67 39 5	66 57 4	66 14 4	65 30 0	64 44 5	4
52	70 56 9	70 28 9	69 58 3	69 25 9	68 51 4	68 15 4	67 37 5	66 58 1	66 17 5	65 35 7	64 52 6	64 8 5	8
48	70 4 2	69 37 7	69 8 5	68 37 5	68 4 6	67 29 8	66 53 5	66 15 5	65 36 2	64 55 8	64 14 1	63 31 1	12
44	69 11 1	68 45 7	68 18 0	67 48 4	67 16 7	66 43 5	66 8 5	65 31 8	64 53 9	64 14 8	63 34 3	62 52 7	16
40	68 17 4	67 53 3	67 26 7	66 58 4	66 28 1	65 56 2	65 22 5	64 47 1	64 10 5	63 32 7	62 53 5	62 13 1	20
36	67 23 3	67 0 4	66 34 8	66 7 7	65 38 7	65 8 0	64 35 5	64 1 5	63 26 0	62 49 7	62 11 6	61 32 5	24
32	66 28 7	66 6 7	65 42 5	65 16 5	64 48 6	64 19 2	63 47 9	63 15 0	62 41 0	62 5 6	61 28 9	60 50 9	28
28	65 33 7	65 12 8	64 49 7	64 24 8	63 57 9	63 29 6	62 59 5	62 27 9	61 54 9	61 20 8	60 45 2	60 8 4	32
24	64 38 6	64 18 5	63 56 3	63 32 4	63 6 8	62 39 4	62 10 5	61 40 0	61 8 2	60 35 3	60 0 8	59 25 1	36
20	63 43 1	63 23 9	63 2 5	62 39 7	62 14 9	61 48 8	61 20 9	60 51 4	60 20 8	59 48 9	59 15 6	58 41 0	40
16	62 47 3	62 28 9	62 8 5	61 46 5	61 22 8	60 57 6	60 30 8	60 2 4	59 32 7	59 2 0	58 29 7	57 56 2	44
12	61 51 2	61 33 7	61 14 1	60 53 1	60 30 2	60 5 9	59 40 2	59 12 8	58 44 2	58 13 4	57 43 1	57 10 7	48
8	60 55 0	60 38 1	60 19 5	59 59 2	59 37 3	59 13 9	58 49 0	58 22 7	57 55 0	57 26 2	56 56 0	56 24 6	52
4	59 58 5	59 42 5	59 24 4	59 5 0	58 44 1	58 21 6	57 57 5	57 32 0	57 5 4	56 37 5	56 8 4	55 37 9	1 56
22 0	59 2 0	58 46 5	58 29 3	58 10 6	57 50 4	57 28 8	57 5 6	56 41 0	56 15 2	55 48 5	55 20 2	54 50 7	2 0
21 56	58 5 2	57 50 5	57 33 9	57 16 0	56 56 5	56 35 6	56 13 4	55 49 6	55 24 8	54 58 8	54 31 5	54 3 0	4
52	57 8 3	56 54 2	56 38 3	56 21 1	56 2 3	55 42 2	55 20 8	54 58 0	54 33 9	54 8 5	53 42 4	53 14 8	8
48	56 11 4	55 57 8	55 42 5	55 25 9	55 7 9	54 48 6	54 27 8	54 5 8	53 42 7	53 18 4	52 52 8	52 26 1	12
44	55 14 2	55 1 3	54 46 5	54 30 6	54 13 2	53 54 6	53 34 7	53 13 4	52 51 1	52 27 7	52 2 9	51 37 1	16
40	54 17 0	54 4 5	53 50 4	53 35 1	53 18 4	53 0 5	52 41 3	52 20 8	51 59 2	51 36 5	51 12 7	50 47 6	20
36	53 19 6	53 7 6	52 54 1	52 39 4	52 23 3	52 6 1	51 47 6	51 27 9	51 7 0	50 45 1	50 22 0	49 57 9	24
32	52 22 1	52 10 6	51 57 6	51 43 6	51 28 2	51 11 6	50 53 7	50 34 7	50 14 6	49 53 4	49 31 1	49 7 7	28
28	51 24 6	51 13 6	51 1 1	50 47 6	50 32 8	50 16 9	49 59 6	49 41 3	49 21 8	49 1 5	48 39 9	48 17 2	32
24	50 27 1	50 16 5	50 4 5	49 51 5	49 37 2	49 21 9	49 5 4	48 47 6	48 28 9	48 9 2	47 48 4	47 26 6	36
20	49 29 3	49 19 3	49 7 8	48 55 3	48 41 5	48 26 8	48 10 9	47 53 8	47 35 7	47 16 8	46 56 6	46 35 5	40
16	48 31 6	48 21 9	48 11 0	47 58 9	47 45 8	47 31 5	47 16 2	46 59 8	46 42 4	46 24 1	46 4 7	45 44 3	44
12	47 33 8	47 24 6	47 14 0	47 2 5	46 49 8	46 36 2	46 21 4	46 5 5	45 48 8	45 31 2	45 12 4	44 52 8	48
8	46 36 0	46 27 1	46 17 0	46 5 9	45 53 8	45 40 7	45 26 5	45 11 2	44 55 1	44 38 1	44 20 1	44 1 0	52
4	45 38 0	45 29 6	45 19 9	45 9 3	44 57 6	44 45 1	44 31 4	44 16 7	44 1 2	43 44 8	43 27 4	43 9 0	2 56
21 0	44 40 1	44 32 0	44 22 7	44 12 6	44 1 4	43 49 3	43 36 2	43 22 1	43 7 2	42 51 4	42 34 5	42 16 9	3 0

DECLINATION — *same Name as* — LATITUDE.

Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.														Westerly Hour Angle.					
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°							
h. m.		°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	
21 0		44 51.6	44 57.0	45 1.4	45 4.7	45 6.9	45 8.2	45 8.3	45 7.4	45 5.4	45 2.5	44 58.5	44 53.4	44 47.1					3 0		
20 56		43 51.9	43 57.2	44 1.5	44 4.8	44 7.0	44 8.4	44 8.6	44 7.8	44 6.1	44 3.3	43 59.5	43 54.7	43 48.8					4		
52		42 52.2	42 57.4	43 1.6	43 4.9	43 7.3	43 8.6	43 8.9	43 8.3	43 6.7	43 4.2	43 0.6	42 56.0	42 50.4					8		
48		41 52.5	41 57.6	42 1.8	42 5.1	42 7.4	42 8.9	42 9.3	42 8.7	42 7.3	42 4.9	42 1.7	41 57.3	41 52.0					12		
44		40 52.7	40 57.8	41 2.0	41 5.3	41 7.6	41 9.1	41 9.6	41 9.2	41 7.9	41 5.7	41 2.6	40 58.6	40 53.6					16		
40		39 53.0	39 57.9	40 2.2	40 5.4	40 7.8	40 9.4	40 9.9	40 9.6	40 8.5	40 6.5	40 3.6	39 59.8	39 55.1					20		
36		38 53.2	38 58.1	39 2.2	39 5.6	39 8.0	39 9.7	39 10.2	39 10.1	39 9.1	39 7.3	39 4.6	39 1.1	38 56.6					24		
32		37 53.5	37 58.3	38 2.4	38 5.7	38 8.2	38 9.8	38 10.6	38 10.5	38 9.7	38 8.1	38 5.6	38 2.3	37 58.1					28		
28		36 53.7	36 58.5	37 2.6	37 5.9	37 8.3	37 10.1	37 10.9	37 11.0	37 10.3	37 8.8	37 6.6	37 3.5	36 59.6					32		
24		35 53.9	35 58.7	36 2.7	36 6.0	36 8.5	36 10.3	36 11.3	36 11.4	36 10.9	36 9.6	36 7.5	36 4.7	36 1.0					36		
20		34 54.1	34 58.9	35 2.9	35 6.2	35 8.7	35 10.6	35 11.6	35 11.9	35 11.5	35 10.4	35 8.5	35 5.9	35 2.5					40		
16		33 54.3	33 59.0	34 3.1	34 6.3	34 8.9	34 10.8	34 11.9	34 12.3	34 12.1	34 11.1	34 9.5	34 7.0	34 3.8					44		
12		32 54.6	32 59.2	33 3.2	33 6.5	33 9.0	33 11.0	33 12.2	33 12.8	33 12.6	33 11.9	33 10.4	33 8.2	33 5.3					48		
8		31 54.7	31 59.3	32 3.3	32 6.6	32 9.3	32 11.3	32 12.6	32 13.2	32 13.3	32 12.6	32 11.4	32 9.3	32 6.7					52		
4		30 54.9	30 59.5	31 3.4	31 6.8	31 9.4	31 11.6	31 12.9	31 13.7	31 13.8	31 13.3	31 12.3	31 10.5	31 8.0					3 56		
20 0		29 55.1	29 59.7	30 3.6	30 6.9	30 9.7	30 11.8	30 13.3	30 14.1	30 14.4	30 14.1	30 13.2	30 11.6	30 9.5					4 0		
19 56		28 55.4	28 59.8	29 3.7	29 7.1	29 9.8	29 12.1	29 13.6	29 14.6	29 15.0	29 14.8	29 14.1	29 12.7	29 10.8					4		
52		27 55.6	28 0.0	28 3.9	28 7.3	28 10.1	28 12.3	28 14.0	28 15.0	28 15.6	28 15.6	28 15.0	28 13.9	28 12.2					8		
48		26 55.7	27 0.1	27																	

The thin horizontal line indicates the passage over the Prime Vertical.

LATITUDE 4°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	44 40.1	44 32.0	44 22.7	44 12.6	44 1.4	43 49.3	43 36.2	43 22.1	43 7.2	42 51.4	42 34.5	42 16.9	3	0
20	56	43 42.0	43 34.4	43 25.5	43 15.8	43 5.1	42 53.5	42 40.9	42 27.4	42 12.9	41 57.7	41 41.6	41 24.5		4
	52	42 44.0	42 36.6	42 28.2	42 18.9	42 8.7	41 57.6	41 45.5	41 32.4	41 18.6	41 4.0	40 48.4	40 32.0		8
	48	41 45.9	41 38.9	41 30.8	41 22.0	41 12.1	41 1.6	40 50.0	40 37.4	40 24.1	40 10.1	39 55.1	39 39.3		12
	44	40 47.8	40 41.2	40 33.4	40 24.9	40 15.6	40 5.4	39 54.3	39 42.3	39 29.5	39 16.1	39 1.7	38 46.4		16
	40	39 49.7	39 43.3	39 36.0	39 28.0	39 18.9	39 9.2	38 58.6	38 47.1	38 34.8	38 21.9	38 8.1	37 53.5		20
	36	38 51.5	38 45.5	38 38.5	38 30.8	38 22.2	38 12.9	38 2.7	37 51.7	37 40.0	37 27.7	37 14.4	37 0.3		24
	32	37 53.2	37 47.6	37 41.0	37 33.6	37 25.4	37 16.6	37 6.8	36 56.3	36 45.1	36 33.3	36 20.5	36 7.0		28
	28	36 55.0	36 49.7	36 43.4	36 36.4	36 28.6	36 20.2	36 10.9	36 0.8	35 50.1	35 38.7	35 26.5	35 13.6		32
	24	35 56.7	35 51.6	35 45.7	35 39.2	35 31.8	35 23.7	35 14.9	35 5.3	34 55.0	34 44.1	34 32.5	34 20.1		36
	20	34 58.4	34 53.7	34 48.1	34 41.8	34 34.9	34 27.2	34 18.8	34 9.6	33 59.8	33 49.5	33 38.3	33 26.5		40
	16	34 0.1	33 55.6	33 50.4	33 44.5	33 37.9	33 30.7	33 22.6	33 13.9	33 4.6	32 54.7	32 44.0	32 32.7		44
	12	33 1.8	32 57.6	32 52.6	32 47.2	32 40.9	32 34.0	32 26.4	32 18.2	32 9.3	31 59.9	31 49.7	31 38.9		48
	8	32 3.4	31 59.6	31 54.9	31 49.7	31 43.8	31 37.3	31 30.2	31 22.3	31 13.9	31 5.0	30 55.3	30 45.0		52
	4	31 5.1	31 1.5	30 57.2	30 52.3	30 46.7	30 40.6	30 33.8	30 26.4	30 18.4	30 10.0	30 0.8	29 51.0	3	56
20	0	30 6.7	30 3.4	29 59.3	29 54.8	29 49.6	29 43.8	29 37.5	29 30.5	29 23.0	29 15.0	29 6.2	28 56.9	4	0
19	56	29 8.4	29 5.3	29 1.6	28 57.3	28 52.4	28 47.1	28 41.1	28 34.5	28 27.4	28 19.8	28 11.6	28 2.8		4
	52	28 9.9	28 7.2	28 3.7	27 59.8	27 55.2	27 50.2	27 44.7	27 38.4	27 31.8	27 24.6	27 16.9	27 8.6		8
	48	27 11.5	27 9.0	27 5.9	27 2.2	26 58.1	26 53.4	26 48.2	26 42.4	26 36.2	26 29.4	26 22.1	26 14.3		12
	44	26 13.1	26 10.8	26 8.0	26 4.7	26 0.8	25 56.5	25 51.6	25 46.2	25 40.4	25 34.1	25 27.3	25 19.9		16
	40	25 14.6	25 12.7	25 10.1	25 7.1	25 3.6	24 59.6	24 55.1	24 50.1	24 44.6	24 38.9	24 32.4	24 25.6		20
	36	24 16.2	24 14.5	24 12.2	24 9.5	24 6.3	24 2.7	23 58.5	23 53.9	23 48.9	23 43.5	23 37.5	23 31.1		24
	32	23 17.8	23 16.3	23 14.3	23 11.8	23 9.0	23 5.8	23 2.0	22 57.7	22 53.1	22 48.1	22 42.5	22 36.6		28
	28	22 19.3	22 18.1	22 16.3	22 14.2	22 11.7	22 8.7	22 5.4	22 1.5	21 57.2	21 52.7	21 47.6	21 42.0		32
	24	21 20.9	21 19.9	21 18.4	21 16.6	21 14.3	21 11.8	21 8.7	21 5.2	21 1.4	20 57.2	20 52.5	20 47.4		36
	20	20 22.3	20 21.7	20 20.5	20 19.0	20 17.0	20 14.8	20 12.0	20 8.9	20 5.4	20 1.7	19 57.4	19 52.9		40
	16	19 23.9	19 23.5	19 22.6	19 21.3	19 19.7	19 17.7	19 15.4	19 12.6	19 9.5	19 6.2	19 2.4	18 58.2		44
	12	18 25.5	18 25.3	18 24.6	18 23.7	18 22.3	18 20.7	18 18.6	18 16.3	18 13.5	18 10.6	18 7.2	18 3.6		48
	8	17 27.0	17 27.1	17 26.7	17 26.0	17 25.0	17 23.6	17 22.0	17 19.9	17 17.6	17 15.1	17 12.1	17 8.8		52
	4	16 28.5	16 28.8	16 28.7	16 28.3	16 27.5	16 26.6	16 25.3	16 23.6	16 21.6	16 19.5	16 16.9	16 14.0	4	56
19	0	15 30.1	15 30.6	15 30.7	15 30.6	15 30.2	15 29.5	15 28.6	15 27.2	15 25.7	15 23.9	15 21.7	15 19.3	5	0
18	56	14 31.6	14 32.4	14 32.7	14 33.0	14 32.8	14 32.5	14 31.8	14 30.9	14 29.7	14 28.3	14 26.5	14 24.5		4
	52	13 33.2	13 34.1	13 34.8	13 35.3	13 35.5	13 35.4	13 35.1	13 34.5	13 33.7	13 32.7	13 31.3	13 29.7		8
	48	12 34.7	12 36.0	12 36.8	12 37.6	12 38.1	12 38.4	12 38.4	12 38.1	12 37.6	12 37.1	12 36.1	12 35.0		12
	44	11 36.3	11 37.7	11 38.9	11 39.9	11 40.7	11 41.3	11 41.6	11 41.7	11 41.7	11 41.4	11 40.9	11 40.1		16
	40	10 37.8	10 39.6	10 41.0	10 42.3	10 43.3	10 44.2	10 44.9	10 45.3	10 45.6	10 45.9	10 45.6	10 45.4		20
	36	9 39.4	9 41.4	9 43.1	9 44.6	9 45.9	9 47.2	9 48.2	9 48.9	9 49.6	9 50.2	9 50.4	9 50.5		24
	32	8 41.0	8 43.2	8 45.1	8 47.0	8 48.6	8 50.1	8 51.5	8 52.6	8 53.6	8 54.6	8 55.2	8 55.7		28
	28	7 42.6	7 45.0	7 47.1	7 49.3	7 51.3	7 53.1	7 54.7	7 56.2	7 57.6	7 58.9	8 0.0	8 0.9		32
	24	6 44.1	6 46.8	6 49.2	6 51.7	6 53.9	6 56.1	6 58.0	6 59.9	7 1.6	7 3.2	7 4.7	7 6.1		36
	20	5 45.7	5 48.6	5 51.4	5 54.0	5 56.5	5 59.0	6 1.4	6 3.5	6 5.6	6 7.7	6 9.5	6 11.3		40
	16	4 47.4	4 50.5	4 53.4	4 56.4	4 59.2	5 2.0	5 4.7	5 7.2	5 9.6	5 12.1	5 14.4	5 16.5		44
	12	3 49.0	3 52.4	3 55.6	3 58.8	4 1.9	4 5.0	4 7.9	4 10.8	4 13.7	4 16.5	4 19.2	4 21.8		48
	8	2 50.6	2 54.3	2 57.7	3 1.2	3 4.6	3 8.0	3 11.3	3 14.5	3 17.7	3 21.0	3 24.0	3 27.0		52
	4	1 52.3	1 56.1	1 59.9	2 3.7	2 7.3	2 11.0	2 14.7	2 18.2	2 21.8	2 25.4	2 28.9	2 32.2	5	56
18	0	0 53.9	0 58.0	1 2.1	1 6.1	1 10.1	1 14.1	1 18.1	1 22.0	1 25.9	1 29.8	1 33.7	1 37.5	6	0

LATITUDE 4°.																	
Westerly		DECLINATION — <i>contrary Name to</i> — LATITUDE.														Westerly	
Hour																Hour	
Angle.		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Angle.		
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	86	0	85	0	84	0	83	0	82	0	81	0	80	0	0	0
23	56	85	52	84	54	83	55	82	55	81	56	80	56	79	57	1	4
	52	85	31	78	36	9	83	40	6	82	43	81	45	80	46	8	8
	48	85	0	18	10	3	83	17	6	82	23	81	27	80	30	12	12
	44	84	20	7	83	36	0	82	47	5	81	56	5	81	3	16	16
	40	83	36	0	82	55	9	82	11	6	81	24	2	80	34	20	20
	36	82	47	5	82	11	6	81	31	3	80	47	2	80	0	24	24
	32	81	56	5	81	24	2	80	47	1	80	6	7	79	22	28	28
	28	81	3	6	80	34	4	80	0	5	79	22	4	78	41	32	32
	24	80	9	4	79	42	6	79	11	3	78	36	3	77	57	36	36
	20	79	14	2	78	49	5	78	20	7	77	47	9	77	11	40	40
	16	78	18	2	77	55	2	77	28	6	76	58	0	76	24	44	44
	12	77	21	6	77	0	3	76	35	4	76	6	9	75	35	48	48
	8	76	24	5	76	4	8	75	41	4	75	14	5	74	44	52	52
	4	75	27	0	75	8	5	74	46	6	74	21	4	73	53	0	56
23	0	74	29	3	74	11	9	73	51	2	73	27	5	73	0	1	0
22	56	73	31	2	73	14	8	72	55	3	72	32	8	72	7	4	4
	52	72	33	0	72	17	3	71	58	9	71	37	6	71	13	8	8
	48	71	34	5	71	19	7	71	2	2	70	42	0	70	18	12	12
	44	70	35	9	70	21	9	70	5	2	69	23	8	69	53	16	16
	40	69	37	2	69	23	8	69	7	8	68	49	4	68	28	20	20
	36	68	38	4	68	25	5	68	10	3	67	32	6	67	10	24	24
	32	67	39	5	67	27	1	67	6	6	66	36	5	66	15	28	28
	28	66	40	4	66	28	5	66	14	6	65	58	5	65	40	32	32
	24	65	41	3	65	29	9	65	16	5	65	1	0	64	43	36	36
	20	64	42	1	64	31	2	64	18	2	63	46	3	63	27	40	40
	16	63	42	9	63	32	4	63	19	9	63	5	5	62	49	44	44
	12	62	43	6	62	33	5	62	21	4	62	7	5	61	51	48	48
	8	61	44	3	61	34	5	61	22	9	61	9	4	60	54	52	52
	4	60	44	9	60	35	4	60	24	2	60	11	2	59	56	1	56
22	0	59	45	6	59	36	3	59	25	4	59	12	8	58	58	2	0
21	56	58	46	1	58	26	6	58	14	4	58	0	6	57	45	4	4
	52	57	46	6	57	27	7	57	15	9	57	2	4	56	47	8	8
	48	56	47	1	56	28	7	56	17	2	56	4	3	55	49	12	12
	44	55	47	6	55	29	7	55	18	6	55	5	5	54	52	16	16
	40	54	48	1	54	30	6	54	19	8	54	7	5	53	53	20	20
	36	53	48	5	53	31	5	53	21	0	53	9	0	52	55	24	24
	32	52	48	9	52	32	4	52	22	1	52	10	5	51	57	28	28
	28	51	49	3	51	33	2	51	23	2	51	11	8	50	59	32	32
	24	50	49	6	50	33	9	50	24	1	50	13	2	49	1	36	36
	20	49	50	0	49	34	5	49	25	0	49	14	3	48	2	40	40
	16	48	50	4	48	35	3	48	26	0	48	15	6	47	4	44	44
	12	47	50	7	47	35	9	47	26	9	47	16	8	46	5	48	48
	8	46	51	0	46	36	6	46	27	8	46	17	8	45	6	52	52
	4	45	51	3	45	37	2	45	28	6	45	18	9	44	5	2	56
21	0	44	51	6	44	37	8	44	29	4	44	19	8	44	9	3	0

LATITUDE 4°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.			
		13°	14	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°				
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	73	0.0	72	0.0	71	0.0	70	0.0	69	0.0	68	0.0	67	0.0	66	0.0
23	56	72	58.2	71	58.4	70	58.5	69	58.6	68	58.6	67	58.7	66	58.7	65	58.8
	52	72	53.0	71	53.5	70	53.8	69	54.1	68	54.4	67	54.7	66	55.0	65	55.1
	48	72	44.3	71	45.4	70	46.2	69	46.9	68	47.5	67	48.1	66	48.6	65	49.1
	44	72	32.4	71	34.0	70	35.5	69	36.9	68	37.9	67	38.8	66	39.9	65	40.7
	40	72	17.3	71	19.8	70	21.9	69	23.9	68	25.6	67	27.2	66	28.6	65	30.1
	36	71	59.1	71	2.8	70	5.5	69	8.2	68	10.7	67	13.1	66	15.2	65	17.1
	32	71	38.0	70	42.7	69	46.4	68	50.1	67	53.4	66	56.5	65	59.5	65	2.0
	28	71	14.0	70	19.8	69	24.8	68	29.5	67	33.7	66	37.7	65	41.3	64	44.7
	24	70	47.5	69	54.6	69	0.7	68	6.5	67	11.8	66	16.6	65	21.1	64	25.3
	20	70	18.6	69	27.0	68	34.3	67	41.3	66	47.6	65	53.4	64	58.9	64	3.9
	16	69	47.5	68	57.2	68	5.9	67	13.8	66	21.3	65	28.3	64	34.7	63	40.6
	12	69	14.3	68	25.4	67	35.2	66	44.5	65	53.1	65	1.2	64	8.6	63	15.5
	8	68	39.2	67	51.6	67	2.8	66	13.3	65	23.1	64	32.2	63	40.7	62	48.7
	4	68	2.3	67	16.1	66	28.6	65	40.4	64	51.3	64	1.6	63	11.1	62	20.2
23	0	67	23.7	66	39.0	65	52.7	65	5.8	64	17.9	63	29.4	62	40.1	61	50.1
22	56	66	43.8	66	0.3	65	15.4	64	29.6	63	43.0	62	55.6	62	7.5	61	18.5
	52	66	2.4	65	20.2	64	36.6	63	52.1	63	6.7	62	20.5	61	33.4	60	45.6
	48	65	19.7	64	38.9	63	56.5	63	13.3	62	29.1	61	43.9	60	58.0	60	11.3
	44	64	36.0	63	56.4	63	15.3	62	33.3	61	50.2	61	6.3	60	21.3	59	35.7
	40	63	51.3	63	12.9	62	32.9	61	52.1	61	10.2	60	27.3	59	43.5	58	58.9
	36	63	5.6	62	28.4	61	49.5	61	9.8	60	29.1	59	47.3	59	4.6	58	21.1
	32	62	18.9	61	42.8	61	5.2	60	26.6	59	46.9	59	6.2	58	24.6	57	42.1
	28	61	31.5	60	56.5	60	20.0	59	42.5	59	3.8	58	24.2	57	43.6	57	2.2
	24	60	43.4	60	9.4	59	33.9	58	57.5	58	20.0	57	41.3	57	1.8	56	21.3
	20	59	54.6	59	21.6	58	47.1	58	11.7	57	35.1	56	57.7	56	19.0	55	39.6
	16	59	5.1	58	33.1	57	59.7	57	25.1	56	49.7	56	13.1	55	35.5	54	57.1
	12	58	15.0	57	44.0	57	11.5	56	38.1	56	3.4	55	27.8	54	51.3	54	13.8
	8	57	24.5	56	54.3	56	22.8	55	50.3	55	16.6	54	42.0	54	6.3	53	29.8
	4	56	33.3	56	4.2	55	33.4	55	1.9	54	29.2	53	55.4	53	20.7	52	45.0
22	0	55	41.9	55	13.5	54	43.7	54	12.9	53	41.1	53	8.3	52	34.4	51	59.6
21	56	54	49.9	54	22.3	53	53.4	53	23.5	52	52.5	52	20.5	51	47.6	51	13.7
	52	53	57.6	53	30.8	53	2.6	52	33.6	52	3.4	51	32.2	51	0.1	50	27.2
	48	53	4.9	52	38.9	52	11.5	51	43.2	51	13.8	50	43.5	50	12.2	49	40.0
	44	52	11.9	51	46.6	51	19.9	50	52.4	50	23.8	49	54.3	49	23.8	48	52.5
	40	51	18.5	50	53.9	50	28.0	50	1.2	49	33.4	49	4.7	48	35.0	48	4.4
	36	50	24.8	50	0.9	49	35.7	49	9.7	48	42.6	48	14.7	47	45.7	47	15.9
	32	49	30.9	49	7.6	48	43.1	48	17.8	47	51.5	47	24.2	46	56.1	46	27.0
	28	48	36.7	48	14.1	47	50.2	47	25.6	47	0.0	46	33.5	46	5.9	45	37.7
	24	47	42.3	47	20.3	46	57.1	46	33.1	46	8.1	45	42.3	45	15.6	44	48.0
	20	46	47.6	46	26.3	46	3.7	45	40.3	45	16.0	44	50.8	44	24.8	43	58.0
	16	45	52.8	45	32.0	45	10.4	44	47.2	44	23.6	43	59.1	43	33.7	43	7.5
	12	44	57.7	44	37.5	44	16.1	43	54.0	43	30.9	43	7.0	42	42.3	42	16.8
	8	44	2.5	43	42.7	43	22.0	43	0.4	42	38.0	42	14.7	41	50.6	41	25.8
	4	43	7.0	42	47.9	42	27.6	42	6.6	41	44.8	41	22.2	40	58.7	40	34.5
21	0	42	11.5	41	52.8	41	33.1	41	12.7	40	51.4	40	29.3	40	6.5	39	42.9

TRUE ALTITUDE OF BODY.

LATITUDE 4°.

Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
15 0	21 0	44 51.6	44 45.2	44 37.8	44 29.4	44 19.8	44 9.4	43 58.0	43 45.5	43 32.2	43 17.9	43 2.7	42 46.5	42 29.3	3 0	9 0	
4	20 56	43 51.9	43 45.5	43 38.4	43 30.1	43 20.8	43 10.6	42 59.4	42 47.8	42 34.3	42 20.4	42 5.6	41 49.8	41 33.2	4	8 56	
8	52	42 52.2	42 46.0	42 38.9	42 30.8	42 21.7	42 11.8	42 0.9	41 49.1	41 36.4	41 22.8	41 8.4	40 53.0	40 36.8	8	52	
12	48	41 52.5	41 46.3	41 39.4	41 31.4	41 22.6	41 12.9	41 2.2	40 50.7	40 38.4	40 25.1	40 11.2	39 56.2	39 40.3	12	48	
16	44	40 52.7	40 46.7	40 39.8	40 32.2	40 23.4	40 14.0	40 3.6	39 52.3	39 40.3	39 27.4	39 13.7	38 59.2	38 43.7	16	44	
20	40	39 53.0	39 47.0	39 40.3	39 32.7	39 24.3	39 15.0	39 4.8	38 53.9	38 42.1	38 29.6	38 16.3	38 2.0	37 47.1	20	40	
24	36	38 53.2	38 47.4	38 40.8	38 33.4	38 25.1	38 16.1	38 6.1	37 55.4	37 43.9	37 31.6	37 18.7	37 4.8	36 50.3	24	36	
28	32	37 53.5	37 47.7	37 41.2	37 33.9	37 25.9	37 17.0	37 7.3	36 56.8	36 45.6	36 33.7	36 21.0	36 7.6	35 53.4	28	32	
32	28	36 53.7	36 48.0	36 41.6	36 34.5	36 26.6	36 18.0	36 8.4	35 58.2	35 47.3	35 35.6	35 23.4	35 10.2	34 56.4	32	28	
36	24	35 53.9	35 48.3	35 42.1	35 35.0	35 27.3	35 18.8	35 9.6	34 59.6	34 48.9	34 37.6	34 25.6	34 12.8	33 59.3	36	24	
40	20	34 54.1	34 48.6	34 42.4	34 35.6	34 27.9	34 19.7	34 10.6	34 0.9	33 50.5	33 39.5	33 27.7	33 15.3	33 2.1	40	20	
44	16	33 54.3	33 48.9	33 42.9	33 36.1	33 28.6	33 20.5	33 11.7	33 2.1	32 52.1	32 41.2	32 29.9	32 17.7	32 4.8	44	16	
48	12	32 54.6	32 49.2	32 43.2	32 36.6	32 29.2	32 21.3	32 12.7	32 3.4	31 53.5	31 43.0	31 31.9	31 20.0	31 7.5	48	12	
52	8	31 54.7	31 49.4	31 43.6	31 37.1	31 29.9	31 22.1	31 13.7	31 4.6	30 55.0	30 44.7	30 33.8	30 22.3	30 10.2	52	8	
15 56	4	30 54.9	30 49.8	30 43.9	30 37.6	30 30.5	30 22.9	30 14.6	30 5.8	29 56.3	29 46.3	29 35.7	29 24.6	29 12.7	3 56	4	
16 0	20 0	29 55.1	29 50.0	29 44.3	29 38.0	29 31.1	29 23.6	29 15.5	29 6.8	28 57.6	28 47.9	28 37.6	28 26.6	28 15.2	4 0	8 0	
4	19 56	28 55.4	28 50.2	28 44.6	28 38.5	28 31.6	28 24.4	28 16.4	28 7.9	27 58.9	27 49.5	27 39.4	27 28.8	27 17.6	4	7 56	
8	52	27 55.6	27 50.4	27 45.0	27 38.9	27 32.3	27 25.0	27 17.3	27 9.0	27 0.3	26 50.9	26 41.2	26 30.8	26 20.0	8	52	
12	48	26 55.7	26 50.7	26 45.2	26 39.3	26 32.7	26 25.7	26 18.1	26 10.1	26 1.5	25 52.5	25 42.9	25 32.9	25 22.2	12	48	
16	44	25 55.9	25 50.9	25 45.6	25 39.7	25 33.2	25 26.4	25 19.0	25 11.0	25 2.7	24 53.9	24 44.7	24 34.7	24 24.4	16	44	
20	40	24 56.1	24 51.2	24 45.9	24 40.0	24 33.7	24 27.0	24 19.7	24 12.1	24 3.9	23 55.3	23 46.3	23 36.7	23 26.6	20	40	
24	36	23 56.3	23 51.4	23 46.1	23 40.4	23 34.3	23 27.6	23 20.6	23 13.0	23 5.1	22 56.6	22 47.9	22 38.6	22 28.8	24	36	
28	32	22 56.4	22 51.6	22 46.4	22 40.8	22 34.7	22 28.3	22 21.3	22 14.0	22 6.2	21 58.0	21 49.4	21 40.4	21 30.9	28	32	
32	28	21 56.6	21 51.8	21 46.7	21 41.2	21 35.2	21 28.9	21 22.1	21 14.8	21 7.3	20 59.3	20 51.0	20 42.1	20 32.9	32	28	
36	24	20 56.8	20 52.0	20 47.0	20 41.6	20 35.7	20 29.5	20 22.8	20 15.7	20 8.3	20 0.6	19 52.5	19 43.9	19 34.9	36	24	
40	20	19 56.9	19 52.2	19 47.2	19 41.9	19 36.2	19 30.0	19 23.5	19 16.6	19 9.4	19 1.8	18 53.9	18 45.6	18 36.9	40	20	
44	16	18 57.1	18 52.4	18 47.5	18 42.2	18 36.5	18 30.6	18 24.2	18 17.5	18 10.4	18 3.0	17 55.4	17 47.3	17 38.8	44	16	
48	12	17 57.3	17 52.6	17 47.8	17 42.5	17 36.9	17 31.1	17 24.9	17 18.3	17 11.4	17 4.3	16 56.8	16 48.9	16 40.7	48	12	
52	8	16 57.4	16 52.8	16 48.0	16 42.9	16 37.4	16 31.6	16 25.5	16 19.1	16 12.4	16 5.4	15 58.1	15 50.5	15 42.6	52	8	
16 56	4	15 57.6	15 53.0	15 48.3	15 43.2	15 37.8	15 32.1	15 26.1	15 19.9	15 13.4	15 6.5	14 59.5	14 52.1	14 44.4	4 56	4	
17 0	19 0	14 57.8	14 53.3	14 48.5	14 43.5	14 38.2	14 32.7	14 26.8	14 20.7	14 14.3	14 7.7	14 0.8	13 53.7	13 46.2	5 0	7 0	
4	18 56	13 57.9	13 53.4	13 48.8	13 43.8	13 38.6	13 33.2	13 27.4	13 21.4	13 15.2	13 8.8	13 2.2	12 55.2	12 48.0	4	6 56	
8	52	12 58.1	12 53.6	12 49.0	12 44.1	12 39.0	12 33.7	12 28.0	12 22.2	12 16.1	12 9.9	12 3.5	11 56.7	11 49.7	8	52	
12	48	11 58.2	11 53.8	11 49.2	11 44.4	11 39.4	11 34.1	11 28.6	11 22.9	11 17.0	11 11.0	11 4.7	10 58.2	10 51.4	12	48	
16	44	10 58.4	10 53.9	10 49.4	10 44.7	10 39.7	10 34.6	10 29.2	10 23.6	10 17.9	10 12.0	10 5.9	9 59.6	9 53.1	16	44	
20	40	9 58.5	9 54.1	9 49.6	9 44.9	9 40.0	9 35.0	9 29.8	9 24.4	9 18.8	9 13.0	9 7.2	9 1.0	8 54.7	20	40	
24	36	8 58.6	8 54.3	8 49.8	8 45.2	8 40.4	8 35.5	8 30.3	8 25.1	8 19.6	8 14.1	8 8.3	8 2.4	7 56.3	24	36	
28	32	7 58.8	7 54.5	7 50.0	7 45.5	7 40.7	7 35.9	7 30.9	7 25.7	7 20.5	7 15.0	7 9.5	7 3.8	6 58.0	28	32	
32	28	6 59.0	6 54.6	6 50.3	6 45.7	6 41.1	6 36.4	6 31.4	6 26.4	6 21.2	6 16.0	6 10.7	6 5.2	5 59.5	32	28	
36	24	5 59.1	5 54.8	5 50.5	5 46.0	5 41.4	5 36.8	5 32.0	5 27.0	5 22.0	5 17.0	5 11.9	5 6.5	5 1.1	36	24	
40	20	4 59.3	4 54.9	4 50.7	4 46.3	4 41.8	4 37.2	4 32.5	4 27.7	4 22.8	4 17.9	4 13.0	4 7.9	4 2.7	40	20	
44	16	3 59.4	3 55.1	3 50.9	3 46.5	3 42.1	3 37.6	3 33.0	3 28.3	3 23.6	3 18.9	3 14.1	3 9.2	3 4.2	44	16	
48	12	2 59.6	2 55.3	2 51.1	2 46.7	2 42.3	2 38.0	2 33.5	2 28.9	2 24.4	2 19.8	2 15.2	2 10.4	2 5.7	48	12	
52	8	1 59.7	1 55.5	1 51.2	1 47.0	1 42.6	1 38.3	1 34.0	1 29.6	1 25.2	1 20.7	1 16.3	1 11.7	1 7.1	52	8	
17 56	4	0 59.8	0 55.7	0 51.4	0 47.2	0 42.9	0 38.7	0 34.5	0 30.2	0 25.9	0 21.6	0 17.3	0 13.0	0 8.6	5 56	4	
18 0	18 0	0 0.0	0 4.2	0 8.4	0 12.6	0 16.7	0 20.9	0 25.1	0 29.2	0 33.3	0 37.5	0 41.7	0 45.8	0 49.9	6 0	6 0	

The heavy zigzag line is the horizon line and separates contrary names from same names.

DECLINATION — $\frac{\text{contrary Name to}}{\text{same Name as}}$ — LATITUDE.

Crossing this line is also equivalent to a change of sign in the altitude from + to - or *vice versa*.

[illegible]

LATITUDE 5°.																	
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.			
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°				
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	82	0.0	81	0.0	80	0.0	79	0.0	78	0.0	77	0.0	76	0.0	75	0.0
23	56	81	56.3	80	56.8	79	57.1	78	57.4	77	57.6	76	57.9	75	58.1	74	58.2
	52	81	45.6	80	47.2	79	48.5	78	49.6	77	50.5	76	51.4	75	51.9	74	52.5
	48	81	28.1	80	31.6	79	34.4	78	36.7	77	38.7	76	40.4	75	41.9	74	43.2
	44	81	4.7	80	10.4	79	15.2	78	19.2	77	22.6	76	25.4	75	28.0	74	30.2
	40	80	35.9	79	44.6	78	51.3	77	57.2	77	2.3	76	6.6	75	10.5	74	13.8
	36	80	2.8	79	14.1	78	23.3	77	31.2	76	38.1	75	44.3	74	49.6	73	54.3
	32	79	25.8	78	40.0	77	51.8	77	1.8	76	10.5	75	18.6	74	25.6	73	31.6
	28	78	45.6	78	2.3	77	16.8	76	29.1	75	39.8	74	49.8	73	58.5	73	6.2
	24	78	2.9	77	22.0	76	38.9	75	53.4	75	6.5	74	18.1	73	28.7	72	38.0
	20	77	17.9	76	39.3	75	58.7	75	15.3	74	30.5	73	44.1	72	56.5	72	7.3
	16	76	31.0	75	55.0	75	16.3	74	35.0	73	52.3	73	7.9	72	21.8	71	34.3
	12	75	42.6	75	8.7	74	32.2	73	52.9	73	12.0	72	29.5	71	45.2	70	59.5
	8	74	53.0	74	20.9	73	46.5	73	9.2	72	30.0	71	49.2	71	6.8	70	22.8
	4	74	2.2	73	31.9	72	59.3	72	23.9	71	46.5	71	7.4	70	26.7	69	44.3
23	0	73	10.7	72	42.0	72	11.0	71	37.3	71	1.7	70	24.3	69	45.1	69	4.3
22	56	72	18.2	71	51.2	71	21.7	70	49.5	70	15.5	69	39.8	69	2.3	68	22.9
	52	71	25.0	70	59.4	70	31.4	70	0.8	69	28.4	68	54.2	68	18.2	67	40.4
	48	70	31.2	70	6.9	69	40.4	69	11.3	68	40.3	68	7.5	67	32.9	66	56.6
	44	69	37.1	69	14.0	68	48.7	68	21.0	67	51.4	67	19.9	66	46.7	66	11.7
	40	68	42.5	68	20.5	67	56.4	67	29.8	67	1.6	66	31.5	65	59.6	65	26.0
	36	67	47.4	67	26.6	67	3.6	66	38.2	66	11.2	65	42.4	65	11.8	64	39.2
	32	66	52.0	66	32.2	66	10.3	65	46.1	65	20.2	64	52.5	64	23.0	63	52.0
	28	65	56.3	65	37.4	65	16.5	64	53.4	64	28.6	64	1.9	63	33.7	63	3.8
	24	65	0.4	64	42.4	64	22.5	64	0.3	63	36.5	63	10.9	62	43.8	62	15.0
	20	64	4.3	63	47.1	63	28.0	63	6.6	62	44.0	62	19.6	61	53.5	61	25.7
	16	63	7.8	62	51.5	62	33.1	62	12.8	61	51.0	61	27.6	61	2.6	60	35.8
	12	62	11.3	61	55.5	61	38.2	61	18.7	60	57.7	60	35.2	60	11.1	59	45.5
	8	61	14.4	60	59.5	60	42.8	60	24.3	60	4.2	59	42.5	59	19.4	58	54.6
	4	60	17.6	60	3.2	59	47.3	59	29.5	59	10.3	58	49.5	58	27.1	58	3.3
22	0	59	20.5	59	6.9	58	51.6	58	34.5	58	16.0	57	56.1	57	34.7	57	11.6
21	56	58	23.4	58	10.3	57	55.7	57	39.3	57	21.5	57	2.4	56	41.8	56	19.6
	52	57	26.1	57	13.6	56	59.7	56	43.9	56	26.9	56	8.4	55	48.5	55	27.4
	48	56	28.7	56	16.8	56	3.3	55	48.3	55	32.0	55	14.2	54	55.1	54	34.7
	44	55	31.3	55	19.8	55	7.0	54	52.5	54	36.8	54	19.9	54	1.4	53	41.7
	40	54	33.6	54	22.8	54	10.5	53	56.6	53	41.5	53	25.3	53	7.6	52	48.6
	36	53	36.0	53	25.6	53	13.8	53	0.5	52	46.1	52	30.4	52	13.5	51	55.2
	32	52	38.2	52	28.3	52	17.1	52	4.4	51	50.5	51	35.4	51	19.1	51	1.6
	28	51	40.5	51	31.0	51	20.2	51	8.0	50	54.8	50	40.3	50	24.6	50	7.7
	24	50	42.7	50	33.6	50	23.2	50	11.6	49	58.9	49	45.0	49	29.9	49	13.7
	20	49	44.7	49	36.1	49	26.3	49	15.0	49	2.9	48	49.5	48	35.1	48	19.4
	16	48	46.8	48	38.5	48	29.1	48	18.5	48	6.7	47	54.0	47	40.1	47	25.1
	12	47	48.8	47	40.9	47	32.0	47	21.7	47	10.5	46	58.3	46	44.9	46	30.5
	8	46	50.7	46	43.3	46	34.7	46	24.9	46	14.2	46	2.5	45	49.7	45	35.8
	4	45	52.6	45	45.6	45	37.4	45	28.0	45	17.8	45	6.6	44	54.3	44	41.0
21	0	44	54.5	44	47.7	44	40.0	44	31.1	44	21.3	44	10.6	43	58.9	43	46.1

TRUE ALTITUDE OF BODY.

LATITUDE 5°.

TRUE LATITUDE OF BODY.

LATITUDE 5°.

Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.		
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
21 0	44 47.0	44 53.8	44 59.6	45 4.3	45 8.2	45 10.9	45 12.5	45 13.0	45 12.6	45 11.1	45 8.5	45 4.8	45 0.2	3 0		
20 56	43 47.4	43 54.2	43 59.8	44 4.6	44 8.4	44 11.1	44 12.8	44 13.5	44 13.2	44 11.9	44 9.4	44 6.1	44 1.6	3 4		
52	42 47.8	42 54.5	43 0.1	43 4.8	43 8.6	43 11.4	43 13.1	43 13.9	43 13.8	43 12.6	43 10.5	43 7.3	43 3.2	8		
48	41 48.2	41 54.9	42 0.4	42 5.1	42 8.9	42 11.6	42 13.5	42 14.3	42 14.4	42 13.4	42 11.4	42 8.5	42 4.6	12		
44	40 48.6	40 55.1	41 0.6	41 5.3	41 9.1	41 11.9	41 13.8	41 14.8	41 14.9	41 14.2	41 12.4	41 9.6	41 6.1	16		
40	39 49.0	39 55.4	40 0.9	40 5.5	40 9.4	40 12.2	40 14.2	40 15.3	40 15.5	40 14.8	40 13.3	40 10.8	40 7.5	20		
36	38 49.4	38 55.7	39 1.1	39 5.7	39 9.7	39 12.5	39 14.6	39 15.7	39 16.1	39 15.6	39 14.2	39 12.0	39 8.9	24		
32	37 49.8	37 56.0	38 1.3	38 6.0	38 9.8	38 12.8	38 14.9	38 16.1	38 16.6	38 16.3	38 15.2	38 13.1	38 10.4	28		
28	36 50.1	36 56.3	37 1.6	37 6.2	37 10.1	37 13.0	37 15.3	37 16.6	37 17.3	37 17.1	37 16.1	37 14.3	37 11.7	32		
24	35 50.5	35 56.6	36 1.8	36 6.4	36 10.3	36 13.4	36 15.6	36 17.1	36 17.9	36 17.9	36 17.0	36 15.4	36 13.1	36		
20	34 50.9	34 56.8	35 2.1	35 6.7	35 10.6	35 13.6	35 16.0	35 17.5	35 18.5	35 18.6	35 18.0	35 16.5	35 14.4	40		
16	33 51.2	33 57.2	34 2.3	34 6.9	34 10.8	34 13.9	34 16.3	34 18.0	34 19.0	34 19.4	34 18.8	34 17.7	34 15.8	44		
12	32 51.5	32 57.4	33 2.6	33 7.1	33 11.0	33 14.2	33 16.7	33 18.5	33 19.7	33 20.1	33 19.8	33 18.8	33 17.2	48		
8	31 51.8	31 57.7	32 2.8	32 7.3	32 11.3	32 14.5	32 17.1	32 18.9	32 20.2	32 20.9	32 20.7	32 19.9	32 18.5	52		
4	30 52.1	30 57.9	31 3.1	31 7.6	31 11.6	31 14.8	31 17.5	31 19.4	31 20.8	31 21.5	31 21.6	31 21.0	31 19.9	56		
20 0	29 52.4	29 58.2	30 3.3	30 7.8	30 11.8	30 15.1	30 17.8	30 19.8	30 21.4	30 22.3	30 22.5	30 22.2	30 21.2	3 0		
19 56	28 52.7	28 58.4	29 3.5	29 8.0	29 12.1	29 15.4	29 18.2	29 20.3	29 22.0	29 23.0	29 23.4	29 23.2	29 22.5	4 0		
52	27 53.0	27 58.7	28 3.7	28 8.3	28 12.3	28 15.7	28 18.6	28 20.8	28 22.5	28 23.8	28 24.3	28 24.4	28 23.8	4 4		
48	26 53.4	26 58.9	27 4.0	27 8.5	27 12.6	27 16.0	27 19.0	27 21.2	27 23.2	27 24.5	27 25.2	27 25.4	27 25.1	8		
44	25 53.6	25 59.2	26 4.2	26 8.7	26 12.8	26 16.3	26 19.3	26 21.8	26 23.8	26 25.3	26 26.1	26 26.5	26 26.4	12		
40	24 53.9	24 59.4	25 4.4	25 9.0	25 13.1	25 16.6	25 19.7	25 22.3	25 24.4	25 26.0	25 27.1	25 27.6	25 27.7	16		
36	23 54.2	23 59.7	24 4.6	24 9.2	24 13.3	24 17.0	24 20.1	24 22.8	24 25.0	24 26.8	24 28.0	24 28.7	24 29.0	20		
32	22 54.5	22 59.9	23 4.9	23 9.4	23 13.6	23 17.3	23 20.5	23 23.2	23 25.7	23 27.5	23 28.9	23 29.9	23 30.4	24		
28	21 54.7	22 0.1	22 5.1	22 9.7	22 13.9	22 17.6	22 20.9	22 23.8	22 26.2	22 28.3	22 29.8	22 31.0	22 31.7	28		
24	20 55.0	21 0.3	21 5.3	21 9.9	21 14.2	21 18.0	21 21.3	21 24.3	21 26.9	21 29.0	21 30.8	21 32.1	21 33.0	32		
20	19 55.2	20 0.6	20 5.6	20 10.2	20 14.5	20 18.3	20 21.7	20 24.8	20 27.5	20 29.8	20 31.7	20 33.2	20 34.3	36		
16	18 55.5	19 0.8	19 5.8	19 10.4	19 14.8	19 18.6	19 22.2	19 25.3	19 28.2	19 30.6	19 32.6	19 34.3	19 35.6	40		
12	17 55.7	18 1.1	18 6.0	18 10.7	18 15.1	18 19.0	18 22.6	18 25.8	18 28.8	18 31.4	18 33.6	18 35.4	18 36.9	44		
8	16 56.0	17 1.3	17 6.3	17 10.9	17 15.3	17 19.4	17 23.0	17 26.3	17 29.5	17 32.2	17 34.5	17 36.6	17 38.3	48		
4	15 56.2	16 1.5	16 6.5	16 11.1	16 15.6	16 19.7	16 23.5	16 26.9	16 30.1	16 33.0	16 35.5	16 37.7	16 39.6	52		
19 0	14 56.5	15 1.7	15 6.7	15 11.4	15 15.9	15 20.0	15 23.9	15 27.4	15 30.8	15 33.8	15 36.5	15 38.9	15 41.0	4 56		
18 56	13 56.7	14 2.0	14 6.9	14 11.7	14 16.2	14 20.4	14 24.3	14 28.0	14 31.4	14 34.6	14 37.4	14 40.0	14 42.3	5 0		
52	12 57.0	13 2.2	13 7.2	13 11.9	13 16.6	13 20.8	13 24.8	13 28.5	13 32.1	13 35.4	13 38.4	13 41.2	13 43.7	4 4		
48	11 57.2	12 2.4	12 7.4	12 12.2	12 16.8	12 21.2	12 25.3	12 29.1	12 32.8	12 36.2	12 39.4	12 42.3	12 45.0	8		
44	10 57.4	11 2.7	11 7.6	11 12.5	11 17.2	11 21.5	11 25.7	11 29.7	11 33.5	11 37.1	11 40.4	11 43.5	11 46.4	12		
40	9 57.7	10 2.9	10 7.9	10 12.7	10 17.5	10 21.9	10 26.2	10 30.3	10 34.2	10 37.9	10 41.3	10 44.7	10 47.8	16		
36	8 57.9	9 3.1	9 8.1	9 13.0	9 17.8	9 22.3	9 26.7	9 30.8	9 34.9	9 38.8	9 42.4	9 45.8	9 49.2	20		
32	7 58.1	8 3.4	8 8.4	8 13.3	8 18.2	8 22.7	8 27.2	8 31.4	8 35.6	8 39.6	8 43.4	8 47.0	8 50.5	24		
28	6 58.4	7 3.6	7 8.6	7 13.6	7 18.5	7 23.1	7 27.6	7 32.0	7 36.4	7 40.5	7 44.4	7 48.3	7 52.0	28		
24	5 58.6	6 3.8	6 8.9	6 13.9	6 18.8	6 23.5	6 28.2	6 32.6	6 37.0	6 41.4	6 45.5	6 49.5	6 53.4	32		
20	4 58.9	5 4.1	5 9.1	5 14.2	5 19.1	5 23.9	5 28.7	5 33.2	5 37.8	5 42.2	5 46.6	5 50.7	5 54.9	36		
16	3 59.1	4 4.3	4 9.4	4 14.4	4 19.5	4 24.4	4 29.1	4 33.9	4 38.6	4 43.1	4 47.6	4 52.0	4 56.3	40		
12	2 59.3	3 4.6	3 9.6	3 14.7	3 19.8	3 24.8	3 29.7	3 34.5	3 39.3	3 44.1	3 48.7	3 53.3	3 57.8	44		
8	1 59.6	2 4.7	2 9.9	2 15.0	2 20.2	2 25.2	2 30.2	2 35.2	2 40.1	2 45.0	2 49.8	2 54.5	2 59.3	48		
4	0 59.8	1 5.0	1 10.2	1 15.3	1 20.6	1 25.6	1 30.8	1 35.8	1 40.9	1 45.9	1 50.9	1 55.8	2 0.7	52		
18 0	0 0.0	0 5.2	0 10.4	0 15.6	0 20.9	0 26.1	0 31.3	0 36.5	0 41.7	0 46.9	0 52.0	0 57.1	1 2.3	5 56		
														6 0		

The thin horizontal line indicates the passage over the

The thin horizontal line indicates the passage over the Prime Vertical.

LATITUDE 5°.

Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	44 54.5	44 47.7	44 40.0	44 31.1	44 21.3	44 10.6	43 58.9	43 46.1	43 32.3	43 17.7	43 2.2	42 45.8	3	0
20	56	43 56.3	43 49.0	43 42.6	43 34.1	43 24.8	43 14.5	43 3.3	42 51.0	42 37.8	42 23.8	42 8.9	41 53.1		4
	52	42 58.1	42 52.1	42 45.1	42 37.0	42 28.1	42 18.3	42 7.6	41 55.9	41 43.3	41 29.8	41 15.4	41 0.3		8
	48	41 59.9	41 54.2	41 47.6	41 39.9	41 31.4	41 22.1	41 11.8	41 0.6	40 48.5	40 35.6	40 21.9	40 7.4		12
	44	41 1.6	40 56.3	40 50.0	40 42.7	40 34.6	40 25.7	40 16.0	40 5.3	39 53.6	39 41.3	39 28.2	39 14.2		16
	40	40 3.4	39 58.3	39 52.4	39 45.5	39 37.8	39 29.3	39 20.0	39 9.8	38 58.7	38 46.9	38 34.3	38 20.9		20
	36	39 5.1	39 0.4	38 54.7	38 48.2	38 40.9	38 32.9	38 24.0	38 14.2	38 3.7	37 52.4	37 40.4	37 27.5		24
	32	38 6.8	38 2.3	37 57.1	37 50.9	37 44.0	37 36.3	37 27.9	37 18.7	37 8.6	36 57.8	36 46.3	36 34.0		28
	28	37 8.4	37 4.3	36 59.4	36 53.5	36 47.0	36 39.8	36 31.8	36 23.0	36 13.3	36 3.1	35 52.1	35 40.3		32
	24	36 10.0	36 6.2	36 1.6	35 56.1	35 50.0	35 43.2	35 35.6	35 27.2	35 18.1	35 8.3	34 57.8	34 46.6		36
	20	35 11.7	35 8.3	35 3.8	34 58.7	34 53.0	34 46.5	34 39.3	34 31.4	34 22.7	34 13.4	34 3.5	33 52.8		40
	16	34 13.3	34 10.0	34 6.0	34 1.3	33 55.9	33 49.8	33 43.1	33 35.5	33 27.3	33 18.5	33 9.0	32 58.9		44
	12	33 14.9	33 11.9	33 8.2	33 3.8	32 58.7	32 53.1	32 46.7	32 39.6	32 31.8	32 23.5	32 14.5	32 4.9		48
	8	32 16.5	32 13.8	32 10.4	32 6.2	32 1.5	31 56.3	31 50.3	31 43.7	31 36.3	31 28.4	31 19.9	31 10.8		52
	4	31 18.1	31 15.7	31 12.5	31 8.7	31 4.4	30 59.4	30 53.9	30 47.6	30 40.7	30 33.3	30 25.3	30 16.6	3	56
20	0	30 19.7	30 17.4	30 14.7	30 11.2	30 7.1	30 2.6	29 57.3	29 51.6	29 45.1	29 38.1	29 30.5	29 22.4	4	0
19	56	29 21.2	29 19.3	29 16.8	29 13.6	29 9.9	29 5.7	29 0.9	28 55.4	28 49.4	28 42.9	28 35.8	28 28.1		4
	52	28 22.8	28 21.1	28 18.9	28 16.0	28 12.7	28 8.8	28 4.3	27 59.3	27 53.6	27 47.5	27 40.9	27 33.8		8
	48	27 24.3	27 22.9	27 21.0	27 18.4	27 15.4	27 11.9	27 7.8	27 3.1	26 57.9	26 52.1	26 46.1	26 39.3		12
	44	26 25.8	26 24.7	26 23.1	26 20.8	26 18.1	26 14.9	26 11.2	26 6.9	26 2.1	25 56.9	25 51.1	25 44.9		16
	40	25 27.4	25 26.5	25 25.1	25 23.2	25 20.7	25 17.9	25 14.6	25 10.7	25 6.3	25 1.4	24 56.2	24 50.3		20
	36	24 28.9	24 28.3	24 27.2	24 25.5	24 23.5	24 20.9	24 17.9	24 14.4	24 10.4	24 6.0	24 1.1	23 55.8		24
	32	23 30.5	23 30.1	23 29.3	23 27.8	23 26.1	23 23.9	23 21.3	23 18.2	23 14.5	23 10.5	23 6.1	23 1.2		28
	28	22 32.0	22 31.9	22 31.3	22 30.2	22 28.7	22 26.9	22 24.6	22 21.8	22 18.6	22 15.0	22 11.0	22 6.5		32
	24	21 33.5	21 33.7	21 33.3	21 32.5	21 31.4	21 29.8	21 27.9	21 25.5	21 22.6	21 19.5	21 15.9	21 11.9		36
	20	20 35.1	20 35.4	20 35.4	20 34.9	20 34.0	20 32.8	20 31.2	20 29.2	20 26.7	20 23.9	20 20.8	20 17.2		40
	16	19 36.6	19 37.3	19 37.5	19 37.2	19 36.7	19 35.7	19 34.5	19 32.8	19 30.7	19 28.4	19 25.7	19 22.5		44
	12	18 38.2	18 39.0	18 39.5	18 39.5	18 39.3	18 38.7	18 37.8	18 36.4	18 34.7	18 32.7	18 30.4	18 27.8		48
	8	17 39.7	17 40.8	17 41.5	17 41.9	17 41.9	17 41.6	17 41.0	17 40.1	17 38.7	17 37.1	17 35.3	17 33.0		52
	4	16 41.3	16 42.6	16 43.6	16 44.1	16 44.5	16 44.5	16 44.3	16 43.7	16 42.7	16 41.6	16 40.1	16 38.2	4	56
19	0	15 42.9	15 44.4	15 45.6	15 46.5	15 47.1	15 47.5	15 47.6	15 47.4	15 46.7	15 45.9	15 44.9	15 43.4	5	0
18	56	14 44.4	14 46.2	14 47.7	14 48.8	14 49.8	14 50.4	14 50.9	14 51.0	14 50.8	14 50.3	14 49.6	14 48.7		4
	52	13 46.0	13 48.0	13 49.7	13 51.1	13 52.3	13 53.4	13 54.1	13 54.6	13 54.7	13 54.7	13 54.4	13 53.8		8
	48	12 47.6	12 49.8	12 51.8	12 53.5	12 55.0	12 56.3	12 57.4	12 58.2	12 58.7	12 59.0	12 59.2	12 59.0		12
	44	11 49.1	11 51.6	11 53.9	11 55.9	11 57.7	11 59.3	12 0.7	12 1.8	12 2.7	12 3.4	12 4.0	12 4.2		16
	40	10 50.7	10 53.4	10 56.0	10 58.2	11 0.3	11 2.3	11 4.0	11 5.4	11 6.7	11 7.8	11 8.8	11 9.4		20
	36	9 52.3	9 55.3	9 58.1	10 0.6	10 3.0	10 5.2	10 7.3	10 9.1	10 10.7	10 12.2	10 13.5	10 14.6		24
	32	8 54.0	8 57.2	9 0.2	9 2.9	9 5.7	9 8.2	9 10.6	9 12.7	9 14.7	9 16.5	9 18.3	9 19.8		28
	28	7 55.6	7 59.0	8 2.3	8 5.4	8 8.3	8 11.2	8 13.9	8 16.4	8 18.7	8 20.9	8 23.1	8 25.0		32
	24	6 57.2	7 0.9	7 4.5	7 7.8	7 11.0	7 14.2	7 17.3	7 20.1	7 22.7	7 25.4	7 27.9	7 30.2		36
	20	5 58.9	6 2.8	6 6.6	6 10.2	6 13.7	6 17.2	6 20.5	6 23.8	6 26.8	6 29.8	6 32.7	6 35.5		40
	16	5 0.6	5 4.7	5 8.7	5 12.6	5 16.5	5 20.3	5 23.9	5 27.5	5 30.9	5 34.2	5 37.5	5 40.7		44
	12	4 2.3	4 6.6	4 10.9	4 15.1	4 19.2	4 23.3	4 27.3	4 31.2	4 34.9	4 38.7	4 42.4	4 46.0		48
	8	3 4.0	3 8.6	3 13.2	3 17.6	3 21.9	3 26.3	3 30.7	3 34.9	3 39.1	3 43.2	3 47.3	3 51.3		52
	4	2 5.7	2 10.6	2 15.3	2 20.0	2 24.8	2 29.5	2 34.1	2 38.7	2 43.2	2 47.7	2 52.2	2 56.6	5	56
18	0	1 7.4	1 12.5	1 17.6	1 22.6	1 27.6	1 32.6	1 37.6	1 42.5	1 47.4	1 52.3	1 57.1	2 1.9	6	0

TRUE ALTITUDE OF BODY.

LATITUDE 5°.

Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.	
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	°	°	°	°	°	°	°	°	°	°	°	°	h. m.
24 0	85 0 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	73 0 0	0 0
23 56	84 54.1	83 55.0	82 55.7	81 56.3	80 56.7	79 57.0	78 57.4	77 57.4	76 57.7	75 57.8	74 58.1	73 58.1	72 58.3	4
52	84 37.0	83 40.6	82 43.2	81 45.2	80 46.8	79 48.1	78 49.1	77 49.9	76 50.9	75 51.5	74 52.1	73 52.4	72 53.0	8
48	84 10.2	83 17.6	82 23.1	81 27.4	80 30.8	79 33.6	78 36.0	77 37.7	76 39.6	75 41.4	74 42.4	73 43.3	72 44.4	12
44	83 36.0	82 47.4	81 56.3	81 3.4	80 9.1	79 13.9	78 18.0	77 21.2	76 24.1	75 26.8	74 28.8	73 30.6	72 32.3	16
40	82 56.0	82 11.5	81 23.9	80 34.0	79 42.5	78 49.3	77 55.2	77 0.3	76 4.6	75 8.5	74 11.6	73 14.6	72 17.2	20
36	82 11.7	81 31.1	80 46.9	80 0.1	79 11.2	78 20.5	77 28.6	76 35.2	75 41.4	74 46.7	73 51.3	72 55.3	71 58.8	24
32	81 24.3	80 47.0	80 6.1	79 22.5	78 36.2	77 47.9	76 58.0	76 6.8	75 14.5	74 21.8	73 27.7	72 32.8	71 37.6	28
28	80 34.5	80 0.4	79 22.4	78 41.4	77 57.8	77 12.0	76 24.4	75 35.2	74 44.9	73 53.5	73 1.0	72 7.6	71 13.6	32
24	79 42.9	79 11.5	78 36.3	77 57.9	77 16.8	76 33.2	75 47.8	75 0.6	74 12.2	73 22.5	72 31.5	71 39.8	70 47.2	36
20	78 49.8	78 20.8	77 48.1	77 12.0	76 33.4	75 52.0	75 8.7	74 23.5	73 36.9	72 49.0	71 59.7	71 9.3	70 18.2	40
16	77 55.8	77 28.8	76 58.2	76 24.3	75 47.9	75 8.7	74 27.4	73 44.0	72 59.4	72 13.2	71 25.5	70 36.7	69 46.9	44
12	77 0.9	76 35.8	76 7.1	75 35.2	75 0.6	74 23.5	73 44.1	73 2.7	72 19.7	71 35.4	70 40.3	70 1.9	69 13.6	48
8	76 5.2	75 41.8	75 14.7	74 44.8	74 12.0	73 36.8	72 59.2	72 19.6	71 38.3	70 55.5	70 11.1	69 25.3	68 38.4	52
4	75 9.0	74 46.9	74 21.7	73 53.3	73 22.3	72 48.6	72 12.8	71 34.9	70 55.3	70 14.0	69 31.0	68 46.9	68 1.5	0 56
23 0	74 12.5	73 51.7	73 27.6	73 0.8	72 31.4	71 59.4	71 25.1	70 48.7	70 10.8	69 31.1	68 49.7	68 6.9	67 22.9	1 0
22 56	73 15.4	72 55.7	72 32.9	72 7.4	71 39.6	71 9.1	70 36.2	70 1.4	69 24.9	68 46.8	68 6.9	67 25.4	66 42.8	4
52	72 18.0	71 59.5	71 37.7	71 13.5	70 47.0	70 17.9	69 46.5	69 13.0	68 37.9	68 1.2	67 22.7	66 42.7	66 1.4	8
48	71 20.5	71 2.8	70 42.2	70 19.0	69 53.7	69 25.8	68 55.8	68 23.7	67 50.0	67 14.5	66 37.4	65 58.8	65 18.8	12
44	70 22.6	70 5.7	69 46.2	69 24.1	68 59.7	68 33.0	68 4.3	67 33.6	67 1.1	66 27.0	65 51.0	65 13.7	64 34.9	16
40	69 24.5	69 8.5	68 49.7	68 28.6	68 5.4	67 39.7	67 12.2	66 42.5	66 11.4	65 38.4	65 3.8	64 27.6	63 50.0	20
36	68 26.4	68 10.9	67 52.9	67 32.7	67 10.6	66 46.0	66 19.3	65 50.9	65 20.8	64 49.2	64 15.6	63 40.6	63 4.2	24
32	67 28.0	67 13.2	66 55.9	66 36.6	66 15.2	65 51.7	65 26.2	64 58.6	64 29.6	63 58.9	63 26.7	62 52.8	62 17.5	28
28	66 29.5	66 15.2	65 58.8	65 40.1	65 19.6	64 56.9	64 32.3	64 5.9	63 37.8	63 8.2	62 36.9	62 4.2	61 30.1	32
24	65 30.9	65 17.2	65 1.3	64 43.4	64 23.7	64 1.8	63 38.1	63 12.6	62 45.5	62 16.9	61 46.6	61 14.9	60 41.9	36
20	64 32.2	64 19.0	64 3.7	63 46.5	63 27.4	63 6.3	62 43.4	62 18.8	61 52.7	61 25.1	60 55.7	60 24.9	59 52.9	40
16	63 33.4	63 20.7	63 5.9	62 49.2	62 30.9	62 10.5	61 48.4	61 24.6	60 59.4	60 32.7	60 4.3	59 34.4	59 3.4	44
12	62 34.5	62 22.3	62 7.9	61 51.8	61 34.1	61 14.5	60 53.2	60 30.1	60 5.7	59 39.8	59 12.3	58 43.5	58 13.2	48
8	61 35.5	61 23.7	61 9.9	60 54.3	60 37.1	60 18.1	59 57.5	59 35.3	59 11.6	58 46.5	58 19.9	57 51.9	57 22.6	52
4	60 36.5	60 25.1	60 11.6	59 56.6	59 40.0	59 21.6	59 1.6	58 40.1	58 17.2	57 52.9	57 27.0	56 59.9	56 31.4	1 56
22 0	59 37.5	59 26.3	59 13.3	58 58.8	58 42.7	58 24.9	58 5.5	57 44.6	57 22.5	56 58.9	56 33.8	56 7.3	55 39.8	2 0
21 56	58 38.4	58 27.5	58 14.9	58 0.8	57 45.2	57 27.9	57 9.1	56 48.9	56 27.4	56 4.6	55 40.2	55 14.6	54 47.7	4
52	57 39.2	57 28.6	57 16.4	57 2.7	56 47.6	56 30.8	56 12.6	55 53.0	55 32.1	55 9.8	54 46.3	54 21.4	53 55.3	8
48	56 40.0	56 29.7	56 17.8	56 4.5	55 49.8	55 33.6	55 15.9	54 56.9	54 36.5	54 15.0	53 52.0	53 27.9	53 2.6	12
44	55 40.7	55 30.7	55 19.1	55 6.2	54 52.0	54 36.2	54 19.1	54 0.4	53 40.8	53 19.8	52 57.5	52 34.0	52 9.4	16
40	54 41.4	54 31.6	54 20.4	54 7.8	53 53.9	53 38.6	53 21.9	53 4.0	52 44.8	52 24.5	52 2.8	51 39.9	51 16.0	20
36	53 42.0	53 32.6	53 21.6	53 9.4	52 55.9	52 40.8	52 24.7	52 7.2	51 48.6	51 28.9	51 7.8	50 45.6	50 22.2	24
32	52 42.7	52 33.4	52 22.8	52 10.8	51 57.6	51 43.1	51 27.3	51 10.4	50 52.3	50 33.1	50 12.6	49 51.0	49 28.3	28
28	51 43.3	51 34.3	51 23.8	51 12.1	50 59.4	50 45.2	50 29.9	50 13.3	49 55.8	49 37.1	49 17.1	48 56.1	48 34.0	32
24	50 43.9	50 35.1	50 24.8	50 13.5	50 1.0	49 47.2	49 32.3	49 16.2	48 59.1	48 40.8	48 21.5	48 0.9	47 39.4	36
20	49 44.5	49 35.7	49 25.8	49 14.7	49 2.6	48 49.2	48 34.6	48 18.9	48 2.2	47 44.5	47 25.6	47 5.6	46 44.7	40
16	48 45.0	48 36.5	48 26.8	48 15.9	48 4.1	47 51.0	47 36.8	47 21.5	47 5.3	46 48.0	46 29.5	46 10.2	45 49.8	44
12	47 45.5	47 37.1	47 27.7	47 17.1	47 5.5	46 52.8	46 38.9	46 24.0	46 8.1	45 51.3	45 33.4	45 14.4	44 54.6	48
8	46 46.0	46 37.8	46 28.5	46 18.2	46 6.9	45 54.4	45 41.0	45 26.4	45 10.9	44 54.5	44 37.0	44 18.6	43 59.3	52
4	45 46.5	45 38.4	45 29.4	45 19.2	45 8.2	44 56.1	44 42.8	44 28.7	44 13.6	43 57.6	43 40.6	43 22.6	43 3.8	2 56
21 0	44 47.0	44 39.1	44 30.1	44 20.2	44 9.4	43 57.6	43 44.7	43 30.9	43 16.2	43 0.6	42 44.0	42 26.5	42 8.2	3 0

LATITUDE 5°.

Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	72 0.0	71 0.0	70 0.0	69 0.0	68 0.0	67 0.0	66 0.0	65 0.0	64 0.0	63 0.0	62 0.0	61 0.0	0 0
23 56	71 58.5	70 58.6	69 58.6	68 58.5	67 58.6	66 58.7	65 58.8	64 58.9	63 58.8	62 59.0	61 59.0	60 59.1	4
52	71 53.5	70 54.0	69 54.3	68 54.3	67 54.5	66 54.9	65 55.3	64 55.4	63 55.4	62 55.7	61 56.0	60 56.2	8
48	71 45.4	70 46.3	69 47.0	68 47.3	67 47.9	66 48.5	65 49.3	64 49.6	63 49.9	62 50.5	61 50.9	60 51.3	12
44	71 34.1	70 35.5	69 36.8	68 37.7	67 38.7	66 39.8	65 40.7	64 41.6	63 42.3	62 42.9	61 43.8	60 44.5	16
40	71 19.7	70 21.8	69 23.8	68 25.4	67 27.0	66 28.5	65 30.0	64 31.2	63 32.4	62 33.6	61 34.7	60 35.7	20
36	71 2.4	70 5.4	69 8.2	68 10.5	67 12.8	66 15.0	65 17.0	64 18.8	63 20.4	62 22.2	61 23.7	60 25.1	24
32	70 42.3	69 46.4	68 50.0	67 53.0	66 56.1	65 59.1	64 62.1	63 64.9	62 67.6	61 70.2	60 72.8	59 75.4	28
28	70 19.5	69 24.6	68 29.3	67 33.3	66 37.2	65 41.0	64 44.5	63 47.6	62 50.4	61 53.2	60 55.8	59 58.3	32
24	69 54.2	69 0.4	68 6.2	67 11.3	66 16.1	65 20.7	64 25.0	63 28.9	62 32.5	61 35.9	60 39.1	59 42.2	36
20	69 26.5	68 33.9	67 40.8	66 47.0	65 52.9	64 58.4	63 63.5	62 68.2	61 72.5	60 76.5	59 80.2	58 83.5	40
16	68 56.6	68 5.4	67 13.4	66 20.6	65 27.6	64 34.1	63 40.2	62 45.6	61 50.8	60 55.9	59 60.6	58 65.0	44
12	68 24.7	67 34.8	66 44.0	65 52.3	64 60.3	63 67.9	62 75.0	61 81.6	60 87.7	59 93.2	58 98.2	57 102.8	48
8	67 50.9	67 2.2	66 12.8	65 22.3	64 31.3	63 39.9	62 48.0	61 55.4	60 62.1	59 67.9	58 73.5	57 78.7	52
4	67 15.3	66 27.9	65 39.6	64 50.4	64 0.6	63 10.2	62 19.3	61 27.7	60 35.6	59 43.2	58 50.3	57 57.1	0 56
23 0	66 38.1	65 51.9	65 5.0	64 16.8	63 28.3	62 39.0	61 49.1	60 58.5	59 67.3	58 75.5	57 83.1	56 90.1	1 0
22 56	65 59.4	65 14.6	64 28.7	63 41.9	62 54.4	62 6.3	61 17.5	60 27.8	59 37.6	58 47.1	57 56.1	56 64.5	4
52	65 19.2	64 35.7	63 51.1	63 5.4	62 19.1	61 32.1	60 44.3	59 55.8	58 6.5	57 17.0	56 26.8	55 36.1	8
48	64 37.7	63 55.4	63 12.2	62 27.7	61 42.5	60 56.5	60 9.8	59 22.4	58 34.1	57 45.5	56 56.2	55 6.5	12
44	63 55.2	63 14.1	62 31.9	61 48.7	61 4.6	60 19.7	59 34.1	58 47.6	57 5.5	56 12.7	55 24.4	54 35.6	16
40	63 11.6	62 31.6	61 50.7	61 8.4	60 25.6	59 41.8	58 57.2	58 11.8	57 25.5	56 38.9	55 51.5	54 6.5	20
36	62 26.9	61 48.2	61 8.3	60 27.2	59 45.4	59 2.8	58 19.2	57 34.7	56 49.5	55 6.8	54 17.4	53 30.4	24
32	61 41.3	61 3.7	60 25.0	59 45.0	59 4.2	58 22.6	57 40.1	56 56.7	55 12.4	54 27.7	53 42.2	52 56.2	28
28	60 54.9	60 18.4	59 40.7	59 1.9	58 22.1	57 41.4	57 0.1	56 17.6	55 34.4	54 50.6	53 6.1	52 21.0	32
24	60 7.7	59 32.2	58 55.6	58 17.8	57 39.0	56 59.5	56 19.0	55 37.6	54 55.4	54 12.6	53 29.0	52 44.7	36
20	59 19.9	58 45.4	58 9.8	57 32.8	56 55.2	56 16.6	55 37.1	54 56.7	54 15.4	53 33.6	52 50.9	52 7.6	40
16	58 31.2	57 57.8	57 23.1	56 47.3	56 10.5	55 32.9	54 54.5	54 15.0	53 34.6	52 53.6	52 12.0	51 29.6	44
12	57 42.1	57 9.4	56 35.9	56 0.9	55 25.2	54 48.5	54 11.0	53 32.5	52 53.0	52 13.0	51 32.2	50 50.7	48
8	56 52.2	56 20.6	55 47.9	55 14.0	54 39.2	54 3.4	53 26.8	52 49.1	52 10.7	51 31.6	50 51.6	50 11.0	52
4	56 2.0	55 31.2	54 59.4	54 26.4	53 52.5	53 17.7	52 41.9	52 5.2	51 27.6	50 49.4	50 10.4	49 30.6	1 56
22 0	55 11.2	54 41.4	54 10.3	53 38.2	53 5.2	52 31.2	51 56.4	51 20.5	50 43.8	50 6.5	49 28.4	48 49.5	2 0
21 56	54 20.0	53 51.0	53 20.8	52 49.5	52 17.2	51 44.2	51 10.3	50 35.3	49 59.4	49 22.9	48 45.7	48 7.7	4
52	53 28.3	53 0.1	52 30.8	52 0.3	51 28.9	50 56.6	50 23.5	49 49.5	49 14.4	48 38.8	48 2.4	47 25.2	8
48	52 36.3	52 8.9	51 40.3	51 10.7	50 40.0	50 8.6	49 36.3	49 3.0	48 28.9	47 54.1	47 18.5	46 42.2	12
44	51 44.0	51 17.1	50 49.4	50 20.4	49 50.7	49 20.1	48 48.5	48 16.0	47 42.8	47 8.8	46 34.1	45 58.5	16
40	50 51.1	50 25.2	49 58.1	49 29.9	49 0.9	48 31.1	48 0.3	47 28.6	46 56.1	46 23.0	45 49.0	45 14.3	20
36	49 58.1	49 32.7	49 6.4	48 39.0	48 10.7	47 41.5	47 11.7	46 40.8	46 9.0	45 36.6	45 3.5	44 29.6	24
32	49 4.7	48 40.0	48 14.4	47 47.7	47 20.1	46 51.9	46 22.5	45 52.5	45 21.5	44 49.8	44 17.4	43 44.3	28
28	48 11.0	47 47.0	47 22.0	46 56.0	46 29.2	46 1.6	45 33.1	45 3.7	44 33.5	44 2.6	43 30.9	42 58.6	32
24	47 17.2	46 53.7	46 29.4	46 4.1	45 37.9	45 11.0	44 43.2	44 14.5	43 45.0	43 14.9	42 44.1	42 12.4	36
20	46 23.0	46 0.2	45 36.5	45 11.8	44 46.3	44 20.1	43 53.0	43 25.0	42 56.2	42 26.8	41 56.7	41 25.9	40
16	45 28.6	45 6.4	44 43.3	44 19.3	43 54.4	43 28.8	43 2.4	42 35.1	42 7.0	41 38.4	41 8.9	40 38.9	44
12	44 34.1	44 12.4	43 49.9	43 26.4	43 2.2	42 37.2	42 11.5	41 44.9	41 17.5	40 49.6	40 20.8	39 51.4	48
8	43 39.2	43 18.2	42 56.2	42 33.4	42 9.7	41 45.4	41 20.3	40 54.4	40 27.7	40 0.4	39 32.3	39 3.6	52
4	42 44.2	42 23.7	42 2.3	41 40.0	41 17.0	40 53.3	40 28.8	40 3.5	39 37.5	39 10.9	38 43.5	38 15.5	2 56
21 0	41 49.0	41 29.0	41 8.2	40 46.5	40 24.1	40 0.9	39 37.1	39 12.4	38 47.0	38 21.0	37 54.4	37 27.0	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 5°.

Hourly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Contrary Name.		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
21	0	44 47.0	44 39.1	44 30.1	44 20.2	44 9.4	43 57.6	43 44.7	43 30.9	43 16.2	43 0.6	42 44.0	42 26.5	42 8.2	3 0	9 0	
20	56	43 47.4	43 39.7	43 30.9	43 21.2	43 10.6	42 59.0	42 46.5	42 33.0	42 18.6	42 3.5	41 47.3	41 30.2	41 12.3	4 8	56	
	52	42 47.8	42 40.2	42 31.7	42 22.1	42 11.8	42 0.5	41 48.1	41 35.0	41 21.0	41 6.2	40 50.5	40 33.8	40 16.3	8	52	
	48	41 48.2	41 40.8	41 32.3	41 23.0	41 12.9	41 1.8	40 49.8	40 36.9	40 23.3	40 8.9	39 53.5	39 37.2	39 20.2	12	48	
	44	40 48.6	40 41.3	40 33.0	40 23.9	40 14.0	40 3.1	39 51.4	39 38.8	39 25.5	39 11.4	38 56.4	38 40.5	38 24.0	16	44	
	40	39 49.0	39 41.8	39 33.7	39 24.8	39 15.0	39 4.4	38 52.9	38 40.7	38 27.7	38 13.8	37 59.2	37 43.8	37 27.6	20	40	
	36	38 49.4	38 42.3	38 34.3	38 25.5	38 16.1	38 5.6	37 54.5	37 42.4	37 29.7	37 16.2	37 1.9	36 46.9	36 31.1	24	36	
	32	37 49.8	37 42.8	37 34.9	37 26.4	37 17.0	37 6.9	36 55.8	36 44.1	36 31.7	36 18.5	36 4.6	35 49.9	35 34.5	28	32	
	28	36 50.1	36 43.2	36 35.5	36 27.0	36 18.0	36 7.9	35 57.2	35 45.7	35 33.6	35 20.8	35 7.2	34 52.8	34 37.8	32	28	
	24	35 50.5	35 43.7	35 36.1	35 27.8	35 18.8	35 9.1	34 58.6	34 47.4	34 35.5	34 23.0	34 9.7	33 55.7	33 41.0	36	24	
	20	34 50.9	34 44.1	34 36.7	34 28.5	34 19.7	34 10.1	33 59.9	33 48.8	33 37.3	33 25.1	33 12.1	32 58.4	32 44.1	40	20	
	16	33 51.2	33 44.6	33 37.1	33 29.1	33 20.5	33 11.1	32 50.4	32 39.0	32 27.1	32 14.4	32 1.1	31 47.2	31 31.1	44	16	
	12	32 51.5	32 44.9	32 37.7	32 29.8	32 21.3	32 12.1	32 2.3	31 51.8	31 40.7	31 29.0	31 16.7	31 3.7	30 50.1	48	12	
	8	31 51.8	31 45.4	31 38.2	31 30.4	31 22.1	31 13.1	31 3.4	30 53.2	30 42.3	30 31.0	30 18.9	30 6.2	29 52.9	52	8	
	4	30 52.1	30 45.7	30 38.7	30 31.0	30 22.9	30 14.0	30 4.6	29 54.6	29 43.9	29 32.8	29 21.1	29 8.6	28 55.8	3 56	4	
20	0	29 52.4	29 46.1	29 39.2	29 31.7	29 23.6	29 15.0	29 5.7	28 55.8	28 45.5	28 34.6	28 23.1	28 11.1	27 58.4	4 0	8 0	
19	56	28 52.7	28 46.5	28 39.6	28 32.2	28 24.4	28 15.8	28 6.8	27 57.1	27 47.0	27 36.4	27 25.1	27 13.4	27 1.1	4 8	56	
	52	27 53.0	27 46.8	27 40.1	27 32.8	27 25.0	27 16.7	27 7.8	26 58.4	26 48.4	26 38.1	26 27.1	26 15.6	26 3.6	8	52	
	48	26 53.4	26 47.2	26 40.5	26 33.3	26 25.7	26 17.5	26 8.8	25 59.7	25 49.9	25 39.8	25 29.0	25 17.8	25 6.2	12	48	
	44	25 53.6	25 47.6	25 40.9	25 33.9	25 26.4	25 18.4	25 9.8	24 59.8	24 50.8	24 41.4	24 30.9	24 20.0	24 8.6	16	44	
	40	24 53.9	24 47.9	24 41.4	24 34.4	24 27.0	24 19.1	24 10.7	24 1.9	23 52.7	23 43.0	23 32.8	23 22.1	23 10.9	20	40	
	36	23 54.2	23 48.2	23 41.8	23 34.9	23 27.6	23 19.9	23 11.6	23 3.0	22 53.9	22 44.5	22 34.5	22 24.1	22 13.3	24	36	
	32	22 54.5	22 48.5	22 42.2	22 35.4	22 28.3	22 20.7	22 12.6	22 4.1	21 55.3	21 46.0	21 36.3	21 26.1	21 15.6	28	32	
	28	21 54.7	21 48.9	21 42.5	21 35.9	21 28.9	21 21.4	21 13.5	21 5.2	20 56.5	20 47.5	20 38.0	20 28.1	20 17.8	32	28	
	24	20 55.0	20 49.2	20 42.9	20 36.4	20 29.5	20 22.1	20 14.4	20 6.2	19 57.7	19 48.9	19 39.6	19 30.0	19 20.0	36	24	
	20	19 55.2	19 49.5	19 43.3	19 36.8	19 30.0	19 22.8	19 15.2	19 7.2	18 58.9	18 50.3	18 41.2	18 31.9	18 22.1	40	20	
	16	18 55.5	18 49.8	18 43.7	18 37.3	18 30.6	18 23.5	18 16.0	18 8.2	18 0.1	17 51.6	17 42.9	17 33.7	17 24.2	44	16	
	12	17 55.7	17 50.1	17 44.0	17 37.7	17 31.1	17 24.1	17 16.8	17 9.2	17 1.2	16 53.0	16 44.4	16 35.5	16 26.2	48	12	
	8	16 56.0	16 50.4	16 44.4	16 38.1	16 31.6	16 24.8	16 17.6	16 10.1	16 2.4	15 54.3	15 45.9	15 37.2	15 28.3	52	8	
	4	15 56.2	15 50.7	15 44.7	15 38.5	15 32.1	15 25.4	15 18.3	15 11.0	15 3.4	14 55.6	14 47.4	14 39.0	14 30.2	4 56	4	
19	0	14 56.5	14 50.9	14 45.1	14 39.0	14 32.7	14 26.0	14 19.1	14 11.9	14 4.5	13 56.8	13 48.9	13 40.7	13 32.2	5 0	7 0	
18	56	13 56.7	13 51.2	13 45.4	13 39.4	13 33.2	13 26.6	13 19.8	13 12.8	13 5.5	12 58.1	12 50.3	12 42.3	12 34.1	4 8	56	
	52	12 57.0	12 51.5	12 45.7	12 39.8	12 33.7	12 27.2	12 20.5	12 13.6	12 6.6	11 59.3	11 51.7	11 43.9	11 35.9	8	52	
	48	11 57.2	11 51.7	11 46.0	11 40.2	11 34.1	11 27.8	11 21.2	11 14.5	11 7.6	11 0.5	10 53.1	10 45.5	10 37.7	12	48	
	44	10 57.4	10 52.0	10 46.4	10 40.5	10 34.6	10 28.3	10 21.9	10 15.3	10 8.6	10 1.6	9 54.5	9 47.1	9 39.6	16	44	
	40	9 57.7	9 52.3	9 46.7	9 40.9	9 35.0	9 28.9	9 22.6	9 16.1	9 9.6	9 2.8	8 55.8	8 48.6	8 41.3	20	40	
	36	8 57.9	8 52.5	8 47.0	8 41.3	8 35.5	8 29.5	8 23.3	8 16.9	8 10.5	8 3.9	7 57.1	7 50.1	7 43.1	24	36	
	32	7 58.1	7 52.8	7 47.3	7 41.6	7 35.9	7 30.0	7 23.9	7 17.7	7 11.4	7 5.0	6 58.4	6 51.6	6 44.7	28	32	
	28	6 58.4	6 53.0	6 47.6	6 42.0	6 36.4	6 30.5	6 24.5	6 18.5	6 12.3	6 6.1	5 59.7	5 53.1	5 46.5	32	28	
	24	5 58.6	5 53.3	5 47.9	5 42.3	5 36.8	5 31.0	5 25.2	5 19.2	5 13.2	5 7.1	5 0.9	4 54.6	4 48.2	36	24	
	20	4 58.9	4 53.6	4 48.1	4 42.7	4 37.2	4 31.5	4 25.8	4 19.9	4 14.1	4 8.2	4 2.1	3 56.0	3 49.8	40	20	
	16	3 59.1	3 53.8	3 48.4	3 43.0	3 37.6	3 32.0	3 26.4	3 20.7	3 15.0	3 9.2	3 3.4	2 57.4	2 51.4	44	16	
	12	2 59.3	2 54.1	2 48.7	2 43.3	2 38.0	2 32.5	2 27.0	2 21.4	2 15.8	2 10.2	2 4.5	1 58.8	1 53.0	48	12	
	8	1 59.6	1 54.3	1 49.0	1 43.7	1 38.3	1 33.0	1 27.5	1 22.1	1 16.7	1 11.2	1 5.7	1 0.1	0 54.6	52	8	
	4	0 59.8	0 54.6	0 49.3	0 44.0	0 38.7	0 33.4	0 28.1	0 22.8	0 17.5	0 12.2	0 6.8	0 1.5	0 3.9	5 56	4	
18	0	0 0.0	0 5.2	0 10.4	0 15.6	0 20.9	0 26.1	0 31.3	0 36.5	0 41.7	0 46.9	0 52.0	0 57.1	1 2.3	6 0	6 0	

The heavy zigzag line is the horizon line and separates contrary names from same names.

LATITUDE 5°.															
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.	
Declination														Declination	
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.
h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	h. m.
15 0	21 0	41 49.0	41 29.0	41 8.2	40 46.5	40 24.1	40 0.9	39 37.1	39 12.4	38 47.0	38 21.0	37 54.4	37 27.0	3 0	9 0
4	20 56	40 53.7	40 34.2	40 13.9	39 52.8	39 30.9	39 8.4	38 45.1	38 21.0	37 56.3	37 30.9	37 4.9	36 38.2	4	8 56
8	20 52	39 58.2	39 39.2	39 19.4	38 58.8	38 37.5	38 15.5	37 52.8	37 29.4	37 5.2	36 40.5	36 15.1	35 49.1	8	52
12	20 48	39 2.6	38 44.0	38 24.8	38 4.7	37 43.9	37 22.4	37 0.4	36 37.5	36 13.9	35 49.8	35 25.1	34 59.7	12	48
16	20 44	38 6.8	37 48.7	37 29.9	37 10.3	36 50.0	36 29.2	36 7.7	35 45.4	35 22.4	34 58.9	34 34.8	34 10.1	16	44
20	20 40	37 10.8	36 53.2	36 35.0	36 15.8	35 56.1	35 35.7	35 14.7	34 53.0	34 30.6	34 7.8	33 44.3	33 20.1	20	40
24	20 36	36 14.8	35 57.6	35 39.8	35 21.1	35 1.9	34 42.1	34 21.6	34 0.4	33 38.7	33 16.4	32 53.5	32 30.0	24	36
28	20 32	35 18.6	35 1.9	34 44.5	34 26.3	34 7.6	33 48.2	33 28.3	33 7.7	32 46.5	32 24.7	32 2.4	31 39.5	28	32
32	20 28	34 22.3	34 6.0	33 49.1	33 31.3	33 13.1	32 54.3	32 34.9	32 14.7	31 54.0	31 32.9	31 11.2	30 48.8	32	28
36	20 24	33 25.9	33 10.0	32 53.5	32 36.2	32 18.4	32 0.1	31 41.2	31 21.6	31 1.5	30 40.9	30 19.6	29 58.0	36	24
40	20 20	32 29.4	32 13.8	31 57.8	31 41.0	31 23.7	31 5.8	30 47.4	30 28.4	30 8.7	29 48.6	29 28.0	29 6.8	40	20
44	20 16	31 32.7	31 17.7	31 1.9	30 45.6	30 28.8	30 11.4	29 53.4	29 34.9	29 15.7	28 56.2	28 36.2	28 15.5	44	16
48	20 12	30 36.0	30 21.3	30 6.1	29 50.1	29 33.7	29 16.8	28 59.3	28 41.2	28 22.7	28 3.7	27 44.1	27 24.1	48	12
52	20 8	29 39.3	29 24.9	29 10.0	28 54.5	28 38.5	28 22.1	28 5.1	27 47.5	27 29.4	27 10.9	26 51.9	26 32.4	52	8
15 56	20 4	28 42.4	28 28.4	28 13.9	27 58.8	27 43.2	27 27.2	27 10.7	26 53.6	26 36.0	26 18.0	25 59.5	25 40.6	3 56	4
16 0	20 0	27 45.5	27 31.8	27 17.7	27 3.0	26 47.8	26 32.2	26 16.1	25 59.5	25 42.5	25 24.9	25 7.0	24 48.5	4 0	8 0
4	19 56	26 48.4	26 35.2	26 21.4	26 7.0	25 52.3	25 37.1	25 21.5	25 5.8	24 48.7	24 31.7	24 14.3	23 56.4	4	7 56
8	19 52	25 51.4	25 38.4	25 25.0	25 11.0	24 56.7	24 41.9	24 26.7	24 11.0	23 54.8	23 38.4	23 21.4	23 4.1	8	52
12	19 48	24 54.1	24 41.5	24 28.5	24 15.0	24 1.0	23 46.7	23 31.9	23 16.6	23 0.9	22 44.8	22 28.4	22 11.6	12	48
16	19 44	23 56.9	23 44.6	23 32.0	23 18.7	23 5.2	22 51.3	22 36.9	22 22.1	22 6.8	21 51.3	21 35.3	21 19.0	16	44
20	19 40	22 59.6	22 47.6	22 35.3	22 22.5	22 9.3	21 55.8	21 41.8	21 27.4	21 12.6	20 57.6	20 42.1	20 26.2	20	40
24	19 36	22 2.2	21 50.6	21 38.6	21 26.1	21 13.3	21 0.2	20 46.7	20 32.7	20 18.4	20 3.7	19 48.7	19 33.3	24	36
28	19 32	21 4.8	20 53.5	20 41.8	20 29.7	20 17.2	20 4.5	19 51.4	19 37.9	19 24.0	19 9.8	18 55.2	18 40.3	28	32
32	19 28	20 7.3	19 56.3	19 45.0	19 33.2	19 21.1	19 8.8	18 56.1	18 42.9	18 29.4	18 15.7	18 1.6	17 47.2	32	28
36	19 24	19 9.8	18 59.1	18 48.1	18 36.6	18 24.9	18 12.9	18 0.6	17 47.9	17 34.8	17 21.6	17 7.9	16 54.0	36	24
40	19 20	18 12.2	18 1.8	17 51.1	17 40.0	17 28.6	17 17.0	17 5.1	16 52.8	16 40.1	16 27.3	16 14.2	16 0.7	40	20
44	19 16	17 14.5	17 4.5	16 54.1	16 43.3	16 32.3	16 21.0	16 9.5	15 57.6	15 45.3	15 33.0	15 20.2	15 7.3	44	16
48	19 12	16 16.9	16 7.1	15 57.0	15 46.6	15 35.9	15 25.0	15 13.8	15 2.3	14 50.5	14 38.5	14 26.3	14 13.7	48	12
52	19 8	15 19.1	15 9.6	14 59.9	14 49.8	14 39.4	14 28.9	14 18.0	14 6.9	13 55.5	13 44.0	13 32.2	13 20.1	52	8
16 56	19 4	14 21.4	14 12.1	14 2.7	13 52.9	13 42.9	13 32.7	13 22.3	13 11.5	13 0.6	12 49.4	12 38.0	12 26.4	4 56	4
17 0	19 0	13 23.6	13 14.6	13 5.5	12 56.0	12 46.3	12 36.5	12 26.4	12 16.1	12 5.4	11 54.7	11 43.8	11 32.6	5 0	7 0
4	18 56	12 25.7	12 17.0	12 8.2	11 58.9	11 49.7	11 40.1	11 30.5	11 20.5	11 10.3	11 0.0	10 49.4	10 38.7	4	6 56
8	18 52	11 27.8	11 19.5	11 10.8	11 2.0	10 52.9	10 43.8	10 34.5	10 24.9	10 15.1	10 5.2	9 55.1	9 44.8	8	52
12	18 48	10 29.9	10 21.8	10 13.5	10 4.9	9 56.2	9 47.4	9 38.4	9 29.2	9 19.8	9 10.3	9 0.6	8 50.7	12	48
16	18 44	9 31.9	9 24.1	9 16.1	9 7.8	8 59.5	8 51.0	8 42.3	8 33.5	8 24.4	8 15.4	8 6.1	7 56.7	16	44
20	18 40	8 34.0	8 26.3	8 18.7	8 10.7	8 2.6	7 54.5	7 46.2	7 37.7	7 29.0	7 20.3	7 11.5	7 2.5	20	40
24	18 36	7 35.9	7 28.6	7 21.2	7 13.5	7 5.8	6 57.9	6 50.0	6 41.9	6 33.6	6 25.3	6 16.8	6 8.3	24	36
28	18 32	6 37.9	6 30.9	6 23.7	6 16.3	6 8.9	6 1.3	5 53.7	5 46.0	5 38.1	5 30.1	5 22.1	5 14.0	28	32
32	18 28	5 39.8	5 33.0	5 26.1	5 19.0	5 11.9	5 4.8	4 57.5	4 50.1	4 42.5	4 35.0	4 27.4	4 19.7	32	28
36	18 24	4 41.7	4 35.1	4 28.5	4 21.7	4 14.9	4 8.0	4 1.2	3 54.1	3 46.9	3 39.8	3 32.6	3 25.3	36	24
40	18 20	3 43.6	3 37.3	3 30.9	3 24.4	3 17.9	3 11.4	3 4.8	2 58.1	2 51.3	2 44.6	2 37.7	2 30.9	40	20
44	18 16	2 45.5	2 39.4	2 33.3	2 27.0	2 20.8	2 14.6	2 8.4	2 2.0	1 55.6	1 49.3	1 42.9	1 36.4	44	16
48	18 12	1 47.3	1 41.5	1 35.6	1 29.7	1 23.7	1 17.8	1 12.0	1 5.9	0 59.9	0 54.0	0 48.0	0 41.9	48	12
52	18 8	0 49.1	0 43.5	0 38.0	0 32.2	0 26.6	0 21.0	0 15.5	0 9.8	0 4.2	0 1.4	0 7.0	0 12.7	52	8
17 56	18 4	0 9.1	0 14.4	0 19.8	0 25.2	0 30.5	0 35.8	0 41.0	0 46.3	0 51.6	0 56.8	1 2.1	1 7.2	5 56	4
18 0	18 0	1 7.4	1 12.5	1 17.6	1 22.6	1 27.6	1 32.6	1 37.6	1 42.5	1 47.4	1 52.3	1 57.1	2 1.9	6 0	6 0

LATITUDE 6°.															
Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.														Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°		
h. m.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	h. m.
24 0	84 0.0	85 0.0	86 0.0	87 0.0	88 0.0	89 0.0	90 0.0	89 0.0	88 0.0	87 0.0	86 0.0	85 0.0	84 0.0	0 0	
23 56	83 55.0	84 54.1	85 52.6	86 50.3	87 46.0	88 35.4	89 0.2	88 35.0	87 46.0	86 50.5	85 52.7	84 54.2	83 55.1	4	
52	83 40.6	84 37.0	85 31.8	86 23.8	87 10.6	87 46.3	88 0.7	87 46.6	87 10.9	86 24.3	85 32.2	84 37.4	83 41.0	8	
48	83 17.6	84 10.3	85 0.2	85 45.8	86 24.3	86 51.1	87 1.0	86 51.4	86 24.8	85 46.5	85 1.0	84 11.2	83 18.5	12	
44	82 47.5	83 36.1	84 21.0	85 0.6	85 32.5	85 53.6	86 1.3	85 54.1	85 33.3	85 1.6	84 22.3	83 37.4	82 49.0	16	
40	82 11.6	82 56.1	83 36.4	84 10.9	84 37.9	84 55.4	85 1.7	84 55.9	84 38.9	84 12.3	83 38.0	82 58.1	82 13.8	20	
36	81 31.3	82 11.9	82 48.1	83 18.5	83 41.8	83 56.7	84 2.0	83 57.3	83 43.1	83 20.3	82 50.2	82 14.4	81 34.1	24	
32	80 47.3	81 24.5	81 57.1	82 24.3	82 44.8	82 57.7	83 2.3	82 58.4	82 46.2	82 26.4	81 59.8	81 27.6	80 51.0	28	
28	80 0.5	80 34.7	81 4.4	81 28.8	81 46.9	81 58.4	82 2.6	81 59.3	81 48.7	81 31.2	81 7.5	80 38.5	80 4.9	32	
24	79 11.8	79 43.0	80 10.3	80 32.4	80 48.8	80 59.1	81 2.9	81 0.1	80 50.8	80 35.2	80 13.9	79 47.6	79 16.8	36	
20	78 21.2	78 50.2	79 15.2	79 35.4	79 50.4	79 59.8	80 3.3	80 0.8	79 52.5	79 38.6	79 19.3	78 55.3	78 26.9	40	
16	77 29.3	77 56.3	78 19.3	78 37.9	78 51.6	79 0.4	79 3.6	79 1.5	78 54.1	78 41.4	78 23.9	78 1.7	77 35.6	44	
12	76 36.2	77 1.4	77 22.8	77 40.1	77 52.8	78 0.9	78 4.0	78 2.4	77 55.4	77 43.9	77 27.8	77 7.4	76 43.4	48	
8	75 42.2	76 5.9	76 25.9	76 42.0	76 53.9	77 1.4	77 4.1	77 2.9	76 56.6	76 46.2	76 31.2	76 12.4	75 50.0	52	
4	74 47.5	75 9.8	75 28.4	75 43.7	75 54.8	76 1.8	76 4.5	76 3.3	75 57.7	75 48.1	75 34.3	75 16.8	74 56.1	0 56	
23 0	73 52.2	74 13.2	74 30.9	74 45.0	74 55.5	75 2.2	75 4.9	75 4.0	74 58.7	74 49.9	74 37.1	74 20.8	74 1.6	1 0	
22 56	72 56.4	73 16.2	73 32.9	73 46.4	73 56.2	74 2.6	74 5.4	74 4.5	73 59.7	73 51.4	73 39.6	73 24.6	73 6.4	4	
52	72 0.1	72 18.9	72 34.8	72 47.5	72 56.9	73 3.0	73 5.6	73 4.8	73 0.6	72 52.9	72 42.0	72 27.9	72 10.9	8	
48	71 3.5	71 21.3	71 36.4	71 48.5	71 57.6	72 3.4	72 5.8	72 5.3	72 1.4	71 54.5	71 44.1	71 30.8	71 14.9	12	
44	70 6.5	70 23.5	70 37.9	70 49.6	70 58.1	71 3.7	71 6.3	71 5.8	71 2.4	70 55.8	70 46.2	70 33.6	70 18.6	16	
40	69 9.3	69 25.5	69 39.4	69 50.5	69 58.7	70 4.1	70 6.5	70 6.4	70 3.1	69 57.0	69 48.0	69 36.3	69 22.1	20	
36	68 11.8	68 27.4	68 40.6	68 51.3	68 59.2	69 4.4	69 7.0	69 6.9	69 3.9	68 58.1	68 49.5	68 38.7	68 25.4	24	
32	67 14.1	67 29.0	67 41.7	67 52.0	67 59.7	68 4.9	68 7.3	68 7.4	68 4.6	67 59.4	67 51.3	67 41.0	67 28.4	28	
28	66 16.3	66 30.7	66 42.8	66 52.7	67 0.3	67 5.3	67 7.7	67 7.9	67 5.3	67 0.4	66 52.9	66 43.1	66 31.2	32	
24	65 18.3	65 32.1	65 43.9	65 53.5	66 0.7	66 5.5	66 8.0	66 8.4	66 6.1	66 1.4	65 54.4	65 45.2	65 33.9	36	
20	64 20.1	64 33.4	64 44.8	64 54.2	65 1.1	65 5.8	65 8.3	65 8.7	65 6.7	65 2.4	64 55.8	64 47.1	64 36.4	40	
16	63 21.8	63 34.8	63 45.8	63 54.7	64 1.6	64 6.2	64 8.7	64 9.2	64 7.4	64 3.4	63 57.2	63 48.9	63 38.9	44	
12	62 23.4	62 35.9	62 46.6	62 55.2	63 1.9	63 6.6	63 9.0	63 9.6	63 7.9	63 4.6	62 58.5	62 50.7	62 41.2	48	
8	61 24.9	61 37.1	61 47.3	61 55.8	62 2.3	62 6.8	62 9.4	62 10.0	62 8.6	62 5.2	61 59.8	61 52.5	61 43.3	52	
4	60 26.3	60 38.1	60 48.1	60 56.3	61 2.7	61 7.2	61 9.7	61 10.5	61 9.2	61 6.0	61 1.0	60 54.1	60 45.5	1 56	
22 0	59 27.6	59 39.1	59 48.8	59 56.9	60 3.1	60 7.5	60 10.1	60 10.9	60 9.9	60 6.9	60 2.1	59 55.6	59 47.5	2 0	
21 56	58 28.9	58 40.0	58 49.6	58 57.4	59 3.5	59 7.8	59 10.4	59 11.3	59 10.5	59 7.8	59 3.3	58 57.1	58 49.4	4	
52	57 30.1	57 40.9	57 50.2	57 57.9	58 3.9	58 8.2	58 10.8	58 11.9	58 11.0	58 8.6	58 4.4	57 58.6	57 51.3	8	
48	56 31.2	56 41.7	56 50.8	56 58.4	57 4.2	57 8.5	57 11.2	57 12.2	57 11.6	57 9.3	57 5.5	57 0.1	56 53.2	12	
44	55 32.2	55 42.5	55 51.5	55 58.8	56 4.6	56 8.9	56 11.5	56 12.8	56 12.2	56 10.2	56 6.6	56 1.6	55 55.0	16	
40	54 33.2	54 43.3	54 52.0	54 59.2	55 5.0	55 9.1	55 11.9	55 13.2	55 12.8	55 11.0	55 7.7	55 2.9	54 56.7	20	
36	53 34.2	53 44.0	53 52.6	53 59.7	54 5.3	54 9.5	54 12.2	54 13.6	54 13.4	54 11.9	54 8.7	54 4.2	53 58.4	24	
32	52 35.1	52 44.7	52 53.1	53 0.0	53 5.6	53 9.7	53 12.6	53 14.1	53 14.1	53 12.7	53 9.8	53 5.5	53 0.0	28	
28	51 36.0	51 45.4	51 53.6	52 0.5	52 5.9	52 10.1	52 12.9	52 14.5	52 14.6	52 13.4	52 10.8	52 6.8	52 1.7	32	
24	50 36.8	50 46.0	50 54.1	51 0.9	51 6.3	51 10.5	51 13.4	51 15.0	51 15.2	51 14.1	51 11.7	51 8.1	51 3.3	36	
20	49 37.6	49 46.7	49 54.5	50 1.2	50 6.6	50 10.8	50 13.7	50 15.4	50 15.8	50 14.9	50 12.7	50 9.4	50 4.8	40	
16	48 38.5	48 47.3	48 55.0	49 1.6	49 7.0	49 11.2	49 14.0	49 15.9	49 16.3	49 15.7	49 13.7	49 10.5	49 6.4	44	
12	47 39.2	47 47.8	47 55.5	48 2.0	48 7.3	48 11.4	48 14.5	48 16.3	48 17.0	48 16.4	48 14.6	48 11.8	48 7.8	48	
8	46 39.9	46 48.4	46 56.0	47 2.4	47 7.7	47 11.8	47 14.8	47 16.8	47 17.5	47 17.1	47 15.6	47 12.9	47 9.3	52	
4	45 40.5	45 48.9	45 56.4	46 2.7	46 8.0	46 12.2	46 15.2	46 17.3	46 18.1	46 17.9	46 16.5	46 14.1	46 10.8	2 56	
21 0	44 41.2	44 49.5	44 56.7	45 3.1	45 8.3	45 12.5	45 15.6	45 17.7	45 18.7	45 18.7	45 17.4	45 15.3	45 12.2	3 0	

LATITUDE 6°.															
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	
24 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	73 0 0	72 0 0	71 0 0	0 0	
23 56	82 55 9	81 56 3	80 56 8	79 57 1	78 57 4	77 57 6	76 57 8	75 58 1	74 58 0	73 58 0	72 58 4	71 58 5	70 58 5	4	
52	82 43 6	81 45 7	80 47 3	79 48 7	78 49 6	77 50 3	76 51 3	75 52 0	74 52 6	73 53 0	72 53 4	71 53 9	70 53 9	8	
48	82 24 0	81 28 3	80 31 7	79 34 6	78 36 9	77 38 7	76 40 7	75 42 0	74 43 5	73 44 1	72 45 3	71 46 3	70 46 3	12	
44	81 57 9	81 5 0	80 10 7	79 15 4	78 19 5	77 22 8	76 25 7	75 28 4	74 30 6	73 32 2	72 34 2	71 35 7	70 35 7	16	
40	81 26 2	80 36 3	79 44 8	78 51 8	77 57 6	77 2 6	76 7 1	75 11 0	74 14 3	73 17 1	72 19 9	71 22 3	70 22 3	20	
36	80 50 0	80 3 2	79 14 4	78 23 9	77 31 8	76 38 8	75 44 9	74 50 1	73 55 0	72 58 8	72 2 7	71 6 0	70 6 0	24	
32	80 10 3	79 26 7	78 40 5	77 52 3	77 2 4	76 11 4	75 19 3	74 26 4	73 32 4	72 37 6	71 42 6	70 47 2	70 47 2	28	
28	79 27 3	78 46 7	78 3 2	77 17 5	76 29 9	75 40 8	74 50 8	73 59 4	73 7 1	72 13 6	71 20 0	70 25 7	70 25 7	32	
24	78 42 1	78 4 0	77 23 1	76 39 8	75 54 6	75 7 7	74 19 3	73 29 9	72 39 0	71 47 2	70 54 9	70 1 9	70 1 9	36	
20	77 54 6	77 19 2	76 40 7	75 59 8	75 16 7	74 31 8	73 45 5	72 57 7	72 8 7	71 18 2	70 27 5	69 35 8	69 35 8	40	
16	77 5 7	76 32 5	75 56 2	75 17 8	74 36 7	73 53 8	73 9 3	72 23 4	71 36 0	70 47 3	69 57 9	69 7 6	69 7 6	44	
12	76 15 4	75 44 3	75 9 9	74 33 7	73 54 8	73 13 8	72 31 2	71 47 0	71 4 7	70 14 2	69 26 4	68 37 5	68 37 5	48	
8	75 23 9	74 55 0	74 22 8	73 48 2	73 11 1	72 31 9	71 51 3	71 8 8	70 24 8	69 39 2	68 53 0	68 5 5	68 5 5	52	
4	74 31 8	74 4 4	73 34 1	73 1 2	72 26 0	71 48 8	71 9 8	70 29 1	69 46 6	69 2 7	68 17 8	67 31 8	67 31 8	0 56	
23 0	73 38 6	73 13 0	72 44 2	72 13 2	71 39 6	71 4 1	70 26 8	69 47 7	69 7 0	68 24 4	67 41 1	66 56 5	66 56 5	1 0	
22 56	72 44 9	72 20 6	71 53 6	71 24 0	70 52 2	70 18 3	69 42 5	69 5 1	68 25 8	67 44 9	67 3 0	66 19 7	66 19 7	4	
52	71 50 5	71 27 7	71 2 0	70 34 1	70 3 7	69 31 4	68 57 2	68 21 1	67 43 5	67 4 0	66 23 5	65 41 6	65 41 6	8	
48	70 55 8	70 34 1	70 9 9	69 48 3	69 14 4	68 43 5	68 10 7	67 36 2	67 0 6	66 21 8	65 42 8	65 2 3	65 2 3	12	
44	70 0 6	69 40 1	69 17 1	68 51 8	68 24 3	67 54 7	67 23 4	66 50 3	66 15 4	65 38 7	65 0 9	64 21 8	64 21 8	16	
40	69 5 0	68 45 6	68 23 7	67 59 8	67 33 4	67 5 3	66 35 3	66 3 3	65 29 9	64 54 5	64 18 1	63 40 3	63 40 3	20	
36	68 9 2	67 50 7	67 30 1	67 7 1	66 42 0	66 15 1	65 46 3	65 15 8	64 43 4	64 9 5	63 34 4	62 57 8	62 57 8	24	
32	67 13 0	66 55 6	66 35 8	66 14 1	65 50 1	65 24 2	64 56 7	64 27 3	63 56 4	63 23 6	62 49 8	62 14 4	62 14 4	28	
28	66 16 8	66 0 1	65 41 3	65 20 5	64 57 6	64 32 9	64 6 4	63 38 3	63 8 5	62 37 0	62 4 3	61 30 2	61 30 2	32	
24	65 20 2	65 4 4	64 46 5	64 26 5	64 4 7	63 41 0	63 15 7	62 48 7	62 20 0	61 49 7	61 18 1	60 45 2	60 45 2	36	
20	64 23 3	64 8 5	63 51 3	63 32 4	63 11 3	62 48 7	62 24 5	61 58 6	61 31 0	61 1 7	60 31 3	59 59 4	59 59 4	40	
16	63 26 5	63 12 1	62 55 9	62 37 8	62 17 8	61 56 1	61 32 8	61 7 9	60 41 3	60 13 1	59 43 7	59 13 1	59 13 1	44	
12	62 29 3	62 15 8	62 0 2	61 43 0	61 23 8	61 3 1	60 40 7	60 16 7	59 51 3	59 24 0	58 55 8	58 26 1	58 26 1	48	
8	61 32 2	61 19 2	61 4 4	60 47 9	60 29 6	60 9 7	59 48 2	59 25 2	59 0 6	58 34 5	58 7 2	57 38 5	57 38 5	52	
4	60 34 8	60 22 5	60 8 4	59 52 6	59 35 0	59 16 0	58 55 4	58 33 2	58 9 6	57 44 4	57 18 1	56 50 4	56 50 4	1 56	
22 0	59 37 4	59 25 7	59 12 2	58 57 1	58 40 3	58 22 0	58 2 2	57 41 0	57 18 3	56 53 9	56 28 5	56 1 9	56 1 9	2 0	
21 56	58 39 9	58 28 8	58 15 8	58 1 4	57 45 3	57 27 8	57 8 8	56 48 4	56 26 5	56 3 1	55 38 6	55 12 8	55 12 8	4	
52	57 42 2	57 31 7	57 19 3	57 5 6	56 50 1	56 33 3	56 15 1	55 55 4	55 34 5	55 11 9	54 48 3	54 23 5	54 23 5	8	
48	56 44 5	56 34 4	56 22 6	56 9 5	55 54 8	55 38 7	55 21 1	55 2 3	54 42 0	54 20 3	53 57 7	53 33 7	53 33 7	12	
44	55 46 7	55 37 1	55 25 9	55 13 4	54 59 3	54 43 7	54 27 0	54 8 9	53 49 4	53 28 5	53 6 7	52 43 5	52 43 5	16	
40	54 49 0	54 39 8	54 29 1	54 17 0	54 3 5	53 48 7	53 32 6	53 15 2	52 56 6	52 36 4	52 15 3	51 53 0	51 53 0	20	
36	53 51 0	53 42 4	53 32 1	53 20 5	53 7 7	52 53 5	52 38 1	52 21 4	52 3 4	51 44 0	51 23 7	51 2 2	51 2 2	24	
32	52 53 1	52 44 8	52 35 1	52 24 1	52 11 7	51 58 1	51 43 4	51 27 4	51 10 0	50 51 4	50 31 8	50 11 1	50 11 1	28	
28	51 55 0	51 47 1	51 37 9	51 27 5	51 15 6	51 2 6	50 48 5	50 33 1	50 16 4	49 58 5	49 39 7	49 19 7	49 19 7	32	
24	50 56 9	50 49 5	50 40 7	50 30 7	50 19 5	50 7 0	49 53 4	49 38 6	49 22 7	49 5 4	48 47 4	48 28 1	48 28 1	36	
20	49 58 9	49 51 8	49 43 4	49 33 9	49 23 1	49 11 2	48 58 2	48 44 1	48 28 7	48 12 2	47 54 8	47 36 3	47 36 3	40	
16	49 0 7	48 54 0	48 46 1	48 37 0	48 26 6	48 15 3	48 3 0	47 49 3	47 34 6	47 18 8	47 2 1	46 44 2	46 44 2	44	
12	48 2 5	47 56 3	47 48 7	47 39 9	47 30 2	47 19 4	47 7 5	46 54 5	46 40 4	46 25 1	46 9 0	45 51 9	45 51 9	48	
8	47 4 4	46 58 4	46 51 3	46 43 0	46 33 7	46 23 3	46 11 9	45 59 5	45 46 1	45 31 3	45 15 9	44 59 4	44 59 4	52	
4	46 6 1	46 0 5	45 53 7	45 46 0	45 37 1	45 27 2	45 16 3	45 4 4	44 51 5	44 37 4	44 22 5	44 6 8	44 6 8	2 56	
21 0	45 7 9	45 2 6	44 56 2	44 48 8	44 40 4	44 31 0	44 20 6	44 9 2	43 56 8	43 43 3	43 29 1	43 13 9	43 13 9	3 0	

TRUE ALTITUDE OF BODY.

LATITUDE 6°.															
Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.		
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°		
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
21 0	44 41.2	44 49.5	44 56.7	45 3.1	45 8.3	45 12.5	45 15.6	45 17.7	45 18.7	45 18.7	45 17.4	45 15.3	45 12.2	3 0	
20 56	43 41.9	43 50.0	43 57.2	44 3.4	44 8.6	44 12.8	44 15.9	44 18.2	44 19.3	44 19.3	44 18.5	44 16.4	44 13.6	4 0	
52	42 42.5	42 50.5	42 57.6	43 3.8	43 8.9	43 13.1	43 16.4	43 18.6	43 19.9	43 20.2	43 19.3	43 17.6	43 14.9	8	
48	41 43.1	41 51.0	41 58.1	42 4.2	42 9.3	42 13.5	42 16.7	42 19.1	42 20.5	42 20.9	42 20.3	42 18.7	42 16.4	12	
44	40 43.6	40 51.5	40 58.4	41 4.5	41 9.6	41 13.8	41 17.1	41 19.6	41 21.1	41 21.6	41 21.2	41 19.9	41 17.7	16	
40	39 44.2	39 51.9	39 58.8	40 4.8	40 9.9	40 14.2	40 17.5	40 20.1	40 21.6	40 22.3	40 22.1	40 21.0	40 19.1	20	
36	38 44.8	38 52.4	38 59.2	39 5.2	39 10.2	39 14.6	39 17.9	39 20.6	39 22.2	39 23.0	39 23.0	39 22.1	39 20.5	24	
32	37 45.4	37 52.8	37 59.6	38 5.5	38 10.6	38 14.9	38 18.4	38 21.0	38 22.8	38 23.8	38 23.9	38 23.2	38 21.8	28	
28	36 45.9	36 53.2	36 59.9	37 5.9	37 10.9	37 15.3	37 18.8	37 21.6	37 23.4	37 24.5	37 24.8	37 24.3	37 23.2	32	
24	35 46.4	35 53.6	35 60.3	36 6.2	36 11.3	36 15.6	36 19.2	36 22.0	36 24.0	36 25.3	36 25.8	36 25.4	36 24.4	36	
20	34 46.9	34 54.1	35 0.6	35 6.5	35 11.6	35 16.0	35 19.5	35 22.6	35 24.6	35 26.1	35 26.7	35 26.5	35 25.8	40	
16	33 47.3	33 54.4	34 1.0	34 6.8	34 11.9	34 16.3	34 20.0	34 23.0	34 25.3	34 26.8	34 27.6	34 27.6	34 27.1	44	
12	32 47.8	32 54.9	33 1.3	33 7.1	33 12.2	33 16.7	33 20.4	33 23.6	33 25.9	33 27.6	33 28.4	33 28.8	33 28.4	48	
8	31 48.2	31 55.2	32 1.7	32 7.4	32 12.6	32 17.1	32 20.9	32 24.1	32 26.5	32 28.3	32 29.4	32 29.8	32 29.8	52	
4	30 48.7	30 55.7	31 2.0	31 7.8	31 12.9	31 17.5	31 21.3	31 24.5	31 27.1	31 29.1	31 30.3	31 31.0	31 31.1	3 56	
20 0	29 49.1	29 56.0	30 2.4	30 8.1	30 13.3	30 17.8	30 21.7	30 25.1	30 27.7	30 29.8	30 31.2	30 32.0	30 32.4	4 0	
19 56	28 49.6	28 56.4	29 2.7	29 8.4	29 13.6	29 18.2	29 22.1	29 25.6	29 28.4	29 30.5	29 32.2	29 33.2	29 33.7	4 4	
52	27 50.0	27 56.7	28 3.1	28 8.8	28 14.0	28 18.6	28 22.6	28 26.1	28 29.0	28 31.3	28 33.1	28 34.3	28 35.0	8	
48	26 50.4	26 57.1	27 3.4	27 9.1	27 14.3	27 19.0	27 23.0	27 26.7	27 29.6	27 32.1	27 34.0	27 35.4	27 36.3	12	
44	25 50.9	25 57.5	26 3.7	26 9.4	26 14.7	26 19.3	26 23.5	26 27.2	26 30.3	26 32.9	26 34.9	26 36.5	26 37.6	16	
40	24 51.2	24 57.8	25 4.0	25 9.8	25 15.0	25 19.7	25 23.9	25 27.8	25 30.9	25 33.7	25 35.9	25 37.6	25 39.0	20	
36	23 51.6	23 58.2	24 4.4	24 10.1	24 15.3	24 20.1	24 24.4	24 28.3	24 31.6	24 34.5	24 36.9	24 38.7	24 40.2	24	
32	22 52.0	22 58.5	23 4.7	23 10.5	23 15.7	23 20.5	23 24.8	23 28.8	23 32.3	23 35.3	23 37.8	23 39.9	23 41.6	28	
28	21 52.4	21 58.9	22 5.0	22 10.8	22 16.1	22 20.9	22 25.3	22 29.4	22 33.0	22 36.0	22 38.7	22 41.0	22 42.9	32	
24	20 52.8	20 59.2	21 5.3	21 11.1	21 16.4	21 21.3	21 25.8	21 30.0	21 33.6	21 36.9	21 39.7	21 42.2	21 44.2	36	
20	19 53.1	19 59.6	20 5.7	20 11.4	20 16.8	20 21.7	20 26.3	20 30.6	20 34.3	20 37.7	20 40.7	20 43.2	20 45.6	40	
16	18 53.5	18 59.9	19 6.0	19 11.8	19 17.2	19 22.2	19 26.8	19 31.1	19 35.0	19 38.5	19 41.6	19 44.4	19 46.9	44	
12	17 53.9	18 0.2	18 6.3	18 12.1	18 17.6	18 22.6	18 27.3	18 31.7	18 35.7	18 39.3	18 42.6	18 45.6	18 48.3	48	
8	16 54.2	17 0.6	17 6.7	17 12.5	17 17.9	17 23.0	17 27.8	17 32.3	17 36.4	17 40.2	17 43.6	17 46.8	17 49.6	52	
4	15 54.6	16 0.9	16 7.0	16 12.8	16 18.3	16 23.5	16 28.3	16 32.9	16 37.1	16 41.0	16 44.7	16 48.0	16 51.0	4 56	
19 0	14 54.9	15 1.3	15 7.3	15 13.1	15 18.6	15 23.9	15 28.8	15 33.6	15 37.9	15 41.9	15 45.7	15 49.2	15 52.4	5 0	
18 56	13 55.3	14 1.6	14 7.6	14 13.5	14 19.1	14 24.3	14 29.3	14 34.2	14 38.6	14 42.8	14 46.7	14 50.4	14 53.8	4	
52	12 55.6	13 1.9	13 8.0	13 13.9	13 19.4	13 24.8	13 29.9	13 34.8	13 39.4	13 43.7	13 47.7	13 51.5	13 55.2	8	
48	11 56.0	12 2.3	12 8.4	12 14.2	12 19.8	12 25.3	12 30.4	12 35.4	12 40.1	12 44.6	12 48.8	12 52.8	12 56.6	12	
44	10 56.4	11 2.6	11 8.6	11 14.6	11 20.3	11 25.7	11 31.0	11 36.1	11 40.9	11 45.5	11 49.8	11 54.0	11 58.0	16	
40	9 56.7	10 2.9	10 9.0	10 15.0	10 20.7	10 26.2	10 31.5	10 36.7	10 41.6	10 46.4	10 50.9	10 55.2	10 59.5	20	
36	8 57.0	9 3.2	9 9.4	9 15.3	9 21.1	9 26.7	9 32.1	9 37.4	9 42.4	9 47.3	9 52.0	9 56.5	10 0.9	24	
32	7 57.4	8 3.5	8 9.7	8 15.7	8 21.5	8 27.2	8 32.6	8 38.1	8 43.2	8 48.2	8 53.1	8 57.8	9 2.4	28	
28	6 57.7	7 3.9	7 10.0	7 16.1	7 21.9	7 27.6	7 33.2	7 38.7	7 44.0	7 49.2	7 54.2	7 59.1	8 3.9	32	
24	5 58.0	6 4.2	6 10.4	6 16.4	6 22.4	6 28.2	6 33.8	6 39.4	6 44.9	6 50.1	6 55.3	7 0.4	7 5.4	36	
20	4 58.4	5 4.6	5 10.8	5 16.8	5 22.8	5 28.7	5 34.4	5 40.1	5 45.7	5 51.1	5 56.4	6 1.7	6 6.9	40	
16	3 58.6	4 4.9	4 11.1	4 17.2	4 23.2	4 29.1	4 35.0	4 40.8	4 46.5	4 52.1	4 57.6	5 3.0	5 8.4	44	
12	2 59.0	3 5.2	3 11.5	3 17.6	3 23.6	3 29.7	3 35.6	3 41.6	3 47.4	3 53.1	3 58.8	4 4.4	4 10.0	48	
8	1 59.4	2 5.6	2 11.8	2 18.0	2 24.1	2 30.2	2 36.2	2 42.3	2 48.2	2 54.1	2 59.9	3 5.8	3 11.5	52	
4	0 59.7	1 5.9	1 12.2	1 18.4	1 24.6	1 30.8	1 36.9	1 43.0	1 49.1	1 55.2	2 1.2	2 7.1	2 13.1	5 56	
18 0	0 0.0	0 6.3	0 12.6	0 18.8	0 25.1	0 31.3	0 37.5	0 43.8	0 50.0	0 56.2	1 2.4	1 8.5	1 14.7	6 0	

LATITUDE 6°.

Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
21 0	45 7.9	45 2.6	44 56.2	44 48.8	44 40.4	44 31.0	44 20.6	44 9.2	43 56.8	43 43.3	43 29.1	43 13.9	3 0
20 56	44 9.5	44 4.6	43 58.6	43 51.6	43 43.6	43 34.7	43 24.8	43 13.9	42 2.0	42 49.2	42 35.5	42 21.0	4
52	43 11.3	43 6.6	43 0.9	42 54.4	42 46.8	42 38.3	42 28.8	42 18.5	42 7.2	41 54.8	41 41.8	41 27.8	8
48	42 12.9	42 8.6	42 3.3	41 57.1	41 49.9	41 41.8	41 32.8	41 23.0	41 12.2	41 0.4	40 47.9	40 34.5	12
44	41 14.6	41 10.6	41 5.6	40 59.8	40 52.9	40 45.3	40 36.8	40 27.4	40 17.1	40 5.9	39 53.9	39 41.1	16
40	40 16.2	40 12.6	40 7.8	40 2.3	39 55.9	39 48.7	39 40.6	39 31.7	39 22.0	39 11.2	38 59.9	38 47.6	20
36	39 17.9	39 14.4	39 10.1	39 4.9	38 58.9	38 52.1	38 44.5	38 36.0	38 26.7	38 16.5	38 5.7	37 54.0	24
32	38 19.5	38 16.3	38 12.3	38 7.6	38 1.8	37 55.4	37 48.2	37 40.2	37 31.4	37 21.7	37 11.4	37 0.3	28
28	37 21.0	37 18.2	37 14.5	37 10.0	37 4.8	36 58.7	36 51.9	36 44.4	36 36.0	36 26.8	36 17.0	36 6.4	32
24	36 22.6	36 20.0	36 16.7	36 12.5	36 7.6	36 2.0	35 55.6	35 48.5	35 40.6	35 31.8	35 22.6	35 12.5	36
20	35 24.2	35 21.9	35 18.7	35 15.0	35 10.4	35 5.2	34 59.2	34 52.5	34 45.1	34 36.8	34 28.0	34 18.5	40
16	34 25.7	34 23.7	34 20.9	34 17.4	34 13.2	34 8.3	34 2.8	33 56.5	33 49.5	33 41.7	33 33.4	33 24.4	44
12	33 27.3	33 25.5	33 23.0	33 19.9	33 16.0	33 11.5	33 6.3	33 0.5	32 53.9	32 46.6	32 38.7	32 30.2	48
8	32 28.9	32 27.3	32 25.1	32 22.3	32 18.8	32 14.6	32 9.8	32 4.3	31 58.2	31 51.4	31 43.9	31 35.9	52
4	31 30.4	31 29.2	31 27.2	31 24.7	31 21.5	31 17.7	31 13.3	31 8.2	31 2.5	30 56.0	30 49.2	30 41.6	3 56
20 0	30 31.9	30 31.0	30 29.3	30 27.1	30 24.2	30 20.7	30 16.7	30 12.0	30 6.8	30 0.8	29 54.4	29 47.3	4 0
19 56	29 33.5	29 32.8	29 31.4	29 29.5	29 26.9	29 23.8	29 20.1	29 15.8	29 10.9	29 5.4	28 59.5	28 52.9	4
52	28 35.0	28 34.6	28 33.4	28 31.8	28 29.6	28 26.8	28 23.4	28 19.6	28 15.2	28 10.0	28 4.5	27 58.4	8
48	27 36.6	27 36.3	27 35.5	27 34.2	27 32.3	27 29.8	27 26.8	27 23.3	27 19.3	27 14.6	27 9.5	27 3.9	12
44	26 38.1	26 38.1	26 37.6	26 36.5	26 34.9	26 32.8	26 30.2	26 27.1	26 23.4	26 19.1	26 14.5	26 9.3	16
40	25 39.6	25 39.9	25 39.6	25 38.8	25 37.5	25 35.7	25 33.5	25 30.8	25 27.5	25 23.6	25 19.4	25 14.7	20
36	24 41.2	24 41.7	24 41.6	24 41.2	24 40.2	24 38.8	24 36.8	24 34.5	24 31.6	24 28.1	24 24.3	24 20.0	24
32	23 42.7	23 43.5	23 43.7	23 43.5	23 42.8	23 41.7	23 40.2	23 38.1	23 35.6	23 32.6	23 29.2	23 25.4	28
28	22 44.2	22 45.2	22 45.7	22 45.8	22 45.4	22 44.7	22 43.4	22 41.8	22 39.7	22 37.0	22 34.1	22 30.7	32
24	21 45.8	21 47.0	21 47.8	21 48.2	21 48.0	21 47.6	21 46.7	21 45.4	21 43.7	21 41.4	21 38.9	21 35.9	36
20	20 47.4	20 48.9	20 49.8	20 50.5	20 50.7	20 50.5	20 50.0	20 49.1	20 47.7	20 45.9	20 43.7	20 41.2	40
16	19 49.0	19 50.6	19 51.9	19 52.8	19 53.3	19 53.5	19 53.2	19 52.7	19 51.7	19 50.2	19 48.6	19 46.4	44
12	18 50.5	18 52.4	18 54.0	18 55.1	18 55.9	18 56.4	18 56.5	18 56.3	18 55.7	18 54.6	18 53.3	18 51.7	48
8	17 52.1	17 54.2	17 56.0	17 57.5	17 58.6	17 59.3	17 59.8	17 59.9	17 59.7	17 59.0	17 58.1	17 56.9	52
4	16 53.7	16 56.1	16 58.1	16 59.8	17 1.2	17 2.3	17 3.0	17 3.5	17 3.7	17 3.3	17 2.9	17 2.1	4 56
19 0	15 55.3	15 57.9	16 0.2	16 2.1	16 3.8	16 5.2	16 6.4	16 7.1	16 7.6	16 7.7	16 7.7	16 7.3	5 0
18 56	14 56.9	14 59.7	15 2.3	15 4.5	15 6.4	15 8.1	15 9.7	15 10.8	15 11.6	15 12.1	15 12.5	15 12.4	4
52	13 58.5	14 1.5	14 4.4	14 6.8	14 9.1	14 11.1	14 12.9	14 14.4	14 15.7	14 16.5	14 17.2	14 17.6	8
48	13 0.1	13 3.5	13 6.4	13 9.3	13 11.7	13 14.1	13 16.2	13 18.1	13 19.7	13 20.9	13 22.0	13 22.8	12
44	12 1.8	12 5.3	12 8.6	12 11.6	12 14.4	12 17.0	12 19.5	12 21.7	12 23.6	12 25.3	12 26.8	12 28.0	16
40	11 3.4	11 7.1	11 10.6	11 14.1	11 17.1	11 20.1	11 22.8	11 25.3	11 27.6	11 29.7	11 31.6	11 33.2	20
36	10 5.1	10 9.0	10 12.8	10 16.5	10 19.9	10 23.1	10 26.1	10 29.0	10 31.7	10 34.0	10 36.3	10 38.4	24
32	9 6.7	9 11.0	9 15.1	9 18.9	9 22.6	9 26.1	9 29.5	9 32.7	9 35.7	9 38.4	9 41.1	9 43.7	28
28	8 8.4	8 12.9	8 17.2	8 21.3	8 25.3	8 29.1	8 32.9	8 36.4	8 39.8	8 42.9	8 46.0	8 48.9	32
24	7 10.2	7 14.9	7 19.4	7 23.8	7 28.0	7 32.2	7 36.2	7 40.1	7 43.9	7 47.3	7 50.8	7 54.2	36
20	6 11.9	6 16.8	6 21.6	6 26.3	6 30.9	6 35.2	6 39.6	6 43.9	6 48.0	6 51.8	6 55.7	6 59.4	40
16	5 13.6	5 18.8	5 23.8	5 28.8	5 33.6	5 38.4	5 43.0	5 47.6	5 52.1	5 56.3	6 0.6	6 4.7	44
12	4 15.4	4 20.8	4 26.1	4 31.3	4 36.4	4 41.5	4 46.5	4 51.4	4 56.2	5 0.8	5 5.5	5 10.1	48
8	3 17.2	3 22.8	3 28.3	3 33.9	3 39.3	3 44.7	3 50.0	3 55.3	4 0.4	4 5.4	4 10.5	4 15.4	52
4	2 19.0	2 24.9	2 30.7	2 36.4	2 42.1	2 47.8	2 53.5	2 59.1	3 4.6	3 10.0	3 15.4	3 20.8	5 56
18 0	1 20.8	1 27.0	1 33.0	1 39.1	1 45.0	1 51.0	1 57.0	2 3.0	2 8.8	2 14.6	2 20.4	2 26.2	6 0

TRUE ALTITUDE OF BODY.

LATITUDE 6°.														
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.
24 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	73 0 0	72 0 0	0 0
23 56	83 55 0	82 55 6	81 56 2	80 56 7	79 57 1	78 57 4	77 57 4	76 57 6	75 57 9	74 58 0	73 58 1	72 58 2	71 58 4	4
52	83 40 6	82 43 2	81 45 2	80 47 0	79 48 3	78 49 1	77 50 0	76 51 0	75 51 5	74 52 1	73 52 6	72 52 9	71 53 6	8
48	83 17 6	82 23 2	81 27 5	80 30 9	79 33 7	78 36 0	77 37 9	76 39 8	75 41 0	74 42 3	73 43 3	72 44 2	71 45 4	12
44	82 47 5	81 56 4	81 3 6	80 9 4	79 13 9	78 18 0	77 21 2	76 24 3	75 26 6	74 28 8	73 30 6	72 32 2	71 34 1	16
40	82 11 6	81 24 1	80 34 3	79 42 5	78 49 5	77 55 2	77 0 2	76 4 6	75 8 3	74 11 6	73 14 5	72 17 1	71 19 7	20
36	81 31 3	80 47 2	80 0 5	79 11 3	78 20 7	77 28 6	76 35 2	75 41 5	74 46 6	73 51 2	72 55 1	71 58 8	71 2 5	24
32	80 47 3	80 6 8	79 22 6	78 36 3	77 47 9	76 58 0	76 6 9	75 14 7	74 21 5	73 27 5	72 32 8	71 37 6	70 42 2	28
28	80 0 5	79 22 6	78 41 7	77 58 0	77 12 0	76 24 4	75 35 1	74 44 9	73 53 3	73 0 9	72 7 5	71 13 5	70 19 3	32
24	79 11 8	78 36 5	77 58 1	77 17 2	76 33 4	75 47 8	75 0 6	74 12 2	73 22 4	72 31 4	71 39 5	70 46 9	69 54 0	36
20	78 21 2	77 48 4	77 12 2	76 33 4	75 52 1	75 8 7	74 23 4	73 36 9	72 48 8	71 59 4	71 9 0	70 17 9	69 26 4	40
16	77 29 3	76 58 5	76 24 7	75 48 0	75 8 7	74 27 4	73 44 1	72 59 4	72 12 9	71 25 2	70 36 4	69 46 7	68 56 4	44
12	76 36 2	76 7 5	75 35 5	75 0 9	74 23 6	73 44 1	73 2 8	72 19 7	71 35 0	70 48 9	70 1 7	69 13 3	68 24 3	48
8	75 42 2	75 15 2	74 45 1	74 12 3	73 36 9	72 59 2	72 19 5	71 38 2	70 55 2	70 10 8	69 24 9	68 38 0	67 50 5	52
4	74 47 5	74 22 0	73 53 5	73 22 5	72 48 8	72 12 8	71 34 7	70 55 1	70 13 8	69 30 8	68 46 4	68 1 0	67 14 7	0 56
23 0	73 52 2	73 28 1	73 1 2	72 31 7	71 59 5	71 25 1	70 48 7	70 10 7	69 30 7	68 49 3	68 6 4	67 22 3	66 37 5	1 0
22 56	72 56 4	72 33 6	72 8 0	71 39 8	71 9 0	70 36 2	70 1 5	69 24 8	68 46 3	68 6 3	67 24 9	66 42 3	65 58 7	4
52	72 0 1	71 38 4	71 14 0	70 47 1	70 17 9	69 46 5	69 13 0	68 37 8	68 0 8	67 22 1	66 42 1	66 0 8	65 18 5	8
48	71 3 5	70 42 8	70 19 5	69 53 9	69 26 0	68 55 8	68 23 5	67 49 7	67 14 1	66 36 9	65 58 1	65 18 0	64 37 0	12
44	70 6 5	69 46 7	69 24 6	69 0 1	68 33 2	68 4 3	67 33 4	67 0 8	66 26 6	65 50 5	65 13 0	64 34 1	63 54 3	16
40	69 9 3	68 50 4	68 29 3	68 5 6	67 39 9	67 12 2	66 42 3	66 11 1	65 37 9	65 3 1	64 26 8	63 49 3	63 10 6	20
36	68 11 8	67 53 7	67 33 4	67 10 8	66 46 1	66 19 3	65 50 8	65 20 6	64 48 6	64 14 9	63 39 9	63 3 4	62 25 9	24
32	67 14 1	66 56 7	66 37 2	66 15 5	65 51 8	65 26 2	64 58 6	64 29 4	63 58 4	63 25 9	62 51 9	62 16 6	61 40 3	28
28	66 16 3	65 59 6	65 40 7	65 19 8	64 57 1	64 32 3	64 5 8	63 37 5	63 7 7	62 36 2	62 3 3	61 29 0	60 53 8	32
24	65 18 3	65 2 2	64 44 1	64 24 0	64 1 9	63 38 1	63 12 4	62 45 3	62 16 3	61 45 9	61 14 0	60 40 7	60 6 5	36
20	64 20 1	64 4 5	63 47 2	63 27 8	63 6 5	62 43 4	62 18 6	61 52 4	61 24 4	60 54 9	60 24 0	59 51 8	59 18 5	40
16	63 21 8	63 6 9	62 50 0	62 31 3	62 10 7	61 48 4	61 24 4	60 59 0	60 32 0	60 3 4	59 33 5	59 2 2	58 29 9	44
12	62 23 4	62 8 9	61 52 6	61 34 5	61 14 7	60 53 2	60 29 9	60 5 3	59 39 0	59 11 5	58 42 3	58 12 0	57 40 6	48
8	61 24 9	61 10 9	60 55 0	60 37 6	60 18 3	59 57 5	59 35 1	59 11 1	58 45 8	58 18 9	57 50 8	57 21 3	56 50 7	52
4	60 26 3	60 12 7	59 57 4	59 40 4	59 21 8	59 1 6	58 39 8	58 16 7	57 52 1	57 26 0	56 58 7	56 30 0	56 0 4	1 56
22 0	59 27 6	59 14 5	58 59 6	58 43 2	58 25 1	58 5 5	57 44 4	57 21 9	56 58 1	56 32 8	56 6 1	55 38 4	55 9 5	2 0
21 56	58 28 9	58 16 0	58 1 7	57 45 7	57 28 2	57 9 1	56 48 7	56 26 9	56 3 7	55 39 1	55 13 3	54 46 2	54 18 2	4
52	57 30 1	57 17 6	57 3 6	56 48 1	56 31 1	56 12 6	55 52 7	55 31 6	55 9 0	54 45 2	54 20 0	53 53 7	53 26 5	8
48	56 31 2	56 19 0	56 5 5	55 50 4	55 33 9	55 15 9	54 56 6	54 36 0	54 14 1	53 50 8	53 26 4	53 0 9	52 34 4	12
44	55 32 2	55 20 4	55 7 2	54 52 5	54 36 4	54 19 1	54 0 2	53 40 3	53 18 8	52 56 3	52 32 6	52 7 7	51 42 0	16
40	54 33 2	54 21 7	54 8 8	53 54 6	53 38 9	53 21 9	53 3 7	52 44 2	52 23 5	52 1 5	51 38 4	51 14 2	50 49 1	20
36	53 34 2	53 22 9	53 10 4	52 56 5	52 41 2	52 24 7	52 6 9	51 48 0	51 27 9	51 6 6	50 44 0	50 20 4	49 56 0	24
32	52 35 1	52 24 2	52 11 9	51 58 3	51 43 5	51 27 3	51 10 0	50 51 6	50 32 0	50 11 2	49 49 3	49 26 3	49 2 5	28
28	51 36 0	51 25 3	51 13 3	51 0 0	50 45 5	50 29 9	50 13 0	49 55 1	49 36 0	49 15 7	48 54 4	48 32 0	48 8 8	32
24	50 36 8	50 26 3	50 14 6	50 1 7	49 47 5	49 32 3	49 15 9	48 58 4	48 39 7	48 20 0	47 59 2	47 37 5	47 14 8	36
20	49 37 6	49 27 4	49 15 9	49 3 3	48 49 5	48 34 6	48 18 6	48 1 5	47 43 4	47 24 1	47 3 9	46 42 6	46 20 6	40
16	48 38 5	48 28 3	48 17 1	48 4 8	47 51 4	47 36 8	47 21 1	47 4 6	46 46 8	46 28 1	46 8 3	45 47 6	45 26 1	44
12	47 39 2	47 29 3	47 18 3	47 6 3	46 53 2	46 38 9	46 23 7	46 7 4	45 50 2	45 31 9	45 12 5	44 52 4	44 31 4	48
8	46 39 9	46 30 1	46 19 5	46 7 6	45 54 8	45 41 0	45 26 0	45 10 2	44 53 3	44 35 5	44 16 7	43 57 0	43 36 5	52
4	45 40 5	45 31 0	45 20 5	45 9 0	44 56 4	44 42 8	44 28 3	44 12 8	43 56 4	43 38 9	43 20 6	43 1 4	42 41 5	2 56
21 0	44 41 2	44 31 9	44 21 5	44 10 3	43 58 0	43 44 7	43 30 5	43 15 4	42 59 3	42 42 4	42 24 4	42 5 7	41 46 2	3 0

LATITUDE 6°.

Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	71 0.0	70 0.0	69 0.0	68 0.0	67 0.0	66 0.0	65 0.0	64 0.0	63 0.0	62 0.0	61 0.0	60 0.0	0 0
23 56	70 58.3	69 58.6	68 58.6	67 58.7	66 58.7	65 58.8	64 58.9	63 58.9	62 58.9	61 59.0	60 59.0	59 59.1	4
52	70 53.8	69 54.1	68 54.4	67 54.6	66 54.8	65 55.1	64 55.4	63 55.7	62 55.8	61 55.8	60 56.0	59 56.3	8
48	70 46.1	69 46.9	68 47.4	67 48.0	66 48.4	65 49.0	64 49.6	63 50.0	62 50.5	61 50.8	60 51.1	59 51.5	12
44	70 35.3	69 36.6	68 37.7	67 38.6	66 39.6	65 40.7	64 41.5	63 42.3	62 43.1	61 43.5	60 44.3	59 44.9	16
40	70 21.7	69 23.6	68 25.3	67 26.9	66 28.4	65 29.8	64 31.2	63 32.4	62 33.5	61 34.5	60 35.6	59 36.5	20
36	70 5.1	69 7.9	68 10.4	67 12.7	66 14.7	65 16.7	64 18.6	63 20.3	62 22.1	61 23.3	60 24.9	59 26.1	24
32	69 46.0	68 49.5	67 53.0	66 56.0	65 58.8	65 1.5	64 3.9	63 6.3	62 8.5	61 10.3	60 12.3	59 14.1	28
28	69 24.2	68 29.0	67 33.1	66 37.0	65 40.6	64 44.0	63 47.3	62 50.1	61 53.0	60 55.3	59 57.9	59 0.2	32
24	69 0.1	68 5.7	67 11.0	66 15.7	65 20.2	64 24.5	63 28.5	62 32.2	61 35.6	60 38.7	59 41.7	58 44.6	36
20	68 33.5	67 40.4	66 46.7	65 52.4	64 57.8	64 13.0	63 7.8	62 12.1	61 16.4	60 20.0	59 23.9	58 27.3	40
16	68 4.8	67 12.8	66 20.3	65 27.2	64 33.5	63 39.5	62 45.1	61 50.4	60 55.3	59 59.8	59 4.2	58 8.4	44
12	67 34.1	66 43.4	65 51.9	64 59.8	64 7.2	63 14.2	62 20.7	61 26.8	60 32.6	59 37.9	58 43.1	57 47.9	48
8	67 1.5	66 12.1	65 21.7	64 30.7	63 39.1	62 47.1	61 54.6	61 1.6	60 8.2	59 14.3	58 20.4	57 25.9	52
4	66 27.2	65 38.9	64 49.8	63 59.9	63 9.4	62 18.3	61 26.8	60 34.8	59 42.2	58 49.2	57 56.0	57 2.4	0 56
23 0	65 51.2	65 4.2	64 16.1	63 27.5	62 38.0	61 48.1	60 57.5	60 6.4	59 14.9	58 22.6	57 30.3	56 37.4	1 0
22 56	65 13.7	64 27.8	63 41.1	62 53.5	62 5.2	61 16.2	60 26.7	59 36.6	58 45.9	57 54.6	57 3.1	56 11.0	4
52	64 34.7	63 50.1	63 4.5	62 18.1	61 30.8	60 43.0	59 54.6	59 5.3	58 15.6	57 25.3	56 34.6	55 43.4	8
48	63 54.5	63 11.0	62 26.6	61 41.4	60 55.2	60 8.4	59 21.0	58 32.8	57 44.0	56 54.5	56 4.8	55 14.5	12
44	63 13.0	62 30.9	61 47.5	61 3.3	60 18.3	59 32.6	58 46.1	57 59.0	57 11.1	56 22.6	55 33.7	54 44.3	16
40	62 30.4	61 49.4	61 7.2	60 24.3	59 40.2	58 55.6	58 10.2	57 23.9	56 37.1	55 49.5	55 1.6	54 13.0	20
36	61 46.9	61 6.9	60 26.0	59 44.0	59 1.0	58 17.4	57 32.9	56 47.8	56 1.9	55 15.3	54 28.3	53 40.6	24
32	61 2.3	60 23.6	59 43.5	59 2.7	58 20.8	57 38.1	56 54.8	56 10.5	55 25.7	54 39.9	53 53.9	53 7.1	28
28	60 17.0	59 39.2	59 0.3	58 20.4	57 39.5	56 58.0	56 15.5	55 32.3	54 48.4	54 3.7	53 18.4	52 32.6	32
24	59 30.8	58 54.0	58 16.2	57 37.2	56 57.4	56 16.8	55 35.4	54 53.1	54 10.1	53 26.3	52 42.0	51 57.1	36
20	58 43.7	58 8.1	57 31.2	56 53.3	56 14.4	55 34.8	54 54.4	54 13.0	53 31.0	52 48.1	52 4.7	51 20.6	40
16	57 56.1	57 21.4	56 45.4	56 8.5	55 30.6	54 52.0	54 12.5	53 32.1	52 51.0	52 9.0	51 26.5	50 43.4	44
12	57 7.7	56 34.0	55 58.9	55 23.1	54 46.1	54 8.4	53 29.8	52 50.3	52 10.2	51 29.0	50 47.5	50 5.2	48
8	56 18.8	55 45.9	55 11.9	54 36.8	54 0.9	53 24.1	52 46.4	52 7.8	51 28.5	50 48.4	50 7.6	49 26.2	52
4	55 29.3	54 57.3	54 24.2	53 50.1	53 14.9	52 39.0	52 2.3	51 24.5	50 46.2	50 6.8	49 27.0	48 46.5	1 56
22 0	54 39.3	54 8.2	53 35.9	53 2.6	52 28.4	51 53.4	51 17.4	50 40.7	50 3.1	49 24.6	48 45.7	48 6.0	2 0
21 56	53 48.9	53 18.6	52 47.1	52 14.7	51 41.3	51 7.1	50 32.0	49 56.1	49 19.4	48 41.8	48 3.7	47 24.8	4
52	52 57.9	52 28.4	51 57.8	51 26.2	50 53.6	50 20.3	49 46.1	49 10.9	48 35.1	47 58.3	47 21.0	46 43.0	8
48	52 6.5	51 37.8	51 8.0	50 37.2	50 5.4	49 32.9	48 59.4	48 25.2	47 50.1	47 14.2	46 37.8	46 0.6	12
44	51 14.8	50 46.8	50 17.7	49 47.8	49 16.8	48 45.0	48 12.4	47 38.9	47 4.7	46 29.6	45 54.0	45 17.6	16
40	50 22.7	49 55.4	49 27.1	48 57.8	48 27.6	47 56.6	47 24.8	46 52.1	46 18.7	45 44.4	45 9.5	44 33.9	20
36	49 30.2	49 3.7	48 36.0	48 7.4	47 38.0	47 7.8	46 36.7	46 4.9	45 32.2	44 58.6	44 24.6	43 49.7	24
32	48 37.5	48 11.5	47 44.6	47 16.8	46 48.0	46 18.5	45 48.3	45 17.1	44 45.2	44 12.4	43 39.1	43 5.1	28
28	47 44.3	47 19.0	46 52.8	46 25.7	45 57.6	45 28.9	44 59.3	44 28.9	43 57.8	43 25.8	42 53.2	42 19.9	32
24	46 50.9	46 26.3	46 0.7	45 34.3	45 7.0	44 38.9	44 10.0	43 40.3	43 9.9	42 38.6	42 6.8	41 34.3	36
20	45 57.4	45 33.3	45 8.3	44 42.6	44 15.9	43 48.5	43 20.3	42 51.3	42 21.6	41 51.1	41 20.1	40 48.3	40
16	45 3.5	44 40.0	44 15.7	43 50.5	43 24.5	42 57.8	42 30.3	42 1.9	41 33.0	41 3.2	40 32.9	40 1.8	44
12	44 9.3	43 46.5	43 22.8	42 58.2	42 32.8	42 6.7	41 39.9	41 12.3	40 44.0	40 14.8	39 45.2	39 14.8	48
8	43 15.0	42 52.8	42 29.6	42 5.7	41 40.8	41 15.4	40 49.1	40 22.2	39 54.7	39 26.2	38 57.2	38 27.5	52
4	42 20.5	41 58.8	41 36.2	41 12.8	40 48.6	40 23.8	39 58.2	39 31.9	39 4.9	38 37.2	38 8.8	37 39.9	2 56
21 0	41 25.7	41 4.5	40 42.5	40 19.7	39 56.2	39 31.9	39 7.0	38 41.2	38 14.9	37 47.8	37 20.2	36 51.9	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 6°.

Westerly Hour Angle.			DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.		
Declination															Declination		
ae ne.	Contrary Name.		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.
m.	h.	m.													h. m.	h. m.	
0	21	0	44 41.2	44 31.9	44 21.5	44 10.3	43 58.0	43 44.7	43 30.5	43 15.4	42 59.3	42 42.4	42 24.4	42 5.7	41 46.2	3 0	9 0
4	20	56	43 41.9	43 32.7	43 22.6	43 11.5	42 59.4	42 46.5	42 32.5	42 17.8	42 2.1	41 45.5	41 28.1	41 9.8	40 50.8	4 56	8 56
8		52	42 42.5	42 33.5	42 23.5	42 12.7	42 0.9	41 48.1	41 34.6	41 20.1	41 4.8	40 48.7	40 31.6	40 13.8	39 55.2	8 52	8 52
12		48	41 43.1	41 34.2	41 24.5	41 13.8	41 2.2	40 49.8	40 36.5	40 22.4	40 7.5	39 51.7	39 35.0	39 17.5	38 59.5	12 48	12 48
16		44	40 43.6	40 35.0	40 25.3	40 14.9	40 3.6	39 51.4	39 38.3	39 24.6	39 10.0	38 54.5	38 38.2	38 21.3	38 3.6	16 44	16 44
20		40	39 44.2	39 35.7	39 26.2	39 15.9	39 4.8	38 52.9	38 40.2	38 26.7	38 12.4	37 57.3	37 41.4	37 24.8	37 7.6	20 40	20 40
24		36	38 44.8	38 36.3	38 27.0	38 17.0	38 6.1	37 54.5	37 42.0	37 28.8	37 14.7	37 0.0	36 44.5	36 28.2	36 11.5	24 36	24 36
28		32	37 45.4	37 37.0	37 27.9	37 18.0	37 7.3	36 55.8	36 43.6	36 30.7	36 17.0	36 2.6	35 47.4	35 31.6	35 15.2	28 32	28 32
32		28	36 45.9	36 37.6	36 28.6	36 19.0	36 8.4	35 57.2	35 45.2	35 32.6	35 19.2	35 5.1	34 50.3	34 34.8	34 18.8	32 28	32 28
36		24	35 46.4	35 38.2	35 29.4	35 19.9	35 9.6	34 58.6	34 46.9	34 34.5	34 21.4	34 7.6	33 53.1	33 37.9	33 22.3	36 24	36 24
40		20	34 46.9	34 38.8	34 30.1	34 20.7	34 10.6	33 59.9	33 48.3	33 36.2	33 23.4	33 10.0	32 55.8	32 41.0	32 25.7	40 20	40 20
44		16	33 47.3	33 39.4	33 30.8	33 21.6	33 11.7	33 1.1	32 49.8	32 38.0	32 25.5	32 12.2	31 58.4	31 43.9	31 29.0	44 16	44 16
48		12	32 47.8	32 40.0	32 31.5	32 22.4	32 12.7	32 2.3	31 51.2	31 39.7	31 27.3	31 14.5	31 0.9	30 46.8	30 32.2	48 12	48 12
52		8	31 48.2	31 40.5	31 32.2	31 23.2	31 13.7	31 3.4	30 52.6	30 41.3	30 29.2	30 16.6	30 3.4	29 49.6	29 35.4	52 8	52 8
56		4	30 48.7	30 41.1	30 32.9	30 24.1	30 14.6	30 4.6	29 54.0	29 42.8	29 31.1	29 18.7	29 5.7	28 52.3	28 38.4	3 56	4 56
0	20	0	29 49.1	29 41.5	29 33.5	29 24.8	29 15.5	29 5.7	28 55.2	28 44.3	28 32.8	28 20.7	28 8.1	27 54.9	27 41.4	4 0	8 0
4	19	56	28 49.6	28 42.1	28 34.1	28 25.6	28 16.4	28 6.8	27 56.5	27 45.8	27 34.5	27 22.7	27 10.3	26 57.5	26 44.2	4 56	7 56
8		52	27 50.0	27 42.6	27 34.7	27 26.2	27 17.3	27 7.8	26 57.8	26 47.2	26 36.2	26 24.6	26 12.5	26 0.0	25 47.0	8 52	8 52
12		48	26 50.4	26 43.1	26 35.3	26 27.0	26 18.1	26 8.8	25 59.0	25 48.7	25 37.8	25 26.5	25 14.7	25 2.4	24 49.8	12 48	12 48
16		44	25 50.9	25 43.6	25 35.9	25 27.6	25 19.0	25 9.8	25 0.1	24 50.0	24 39.4	24 28.3	24 16.7	24 4.8	23 52.4	16 44	16 44
20		40	24 51.2	24 44.0	24 36.4	24 28.4	24 19.7	24 10.7	24 1.2	23 51.4	23 41.0	23 30.1	23 18.8	23 7.1	22 55.0	20 40	20 40
24		36	23 51.6	23 44.5	23 37.0	23 29.0	23 20.6	23 11.6	23 2.3	22 52.6	22 42.5	22 31.8	22 20.8	22 9.3	21 57.5	24 36	24 36
28		32	22 52.0	22 45.0	22 37.5	22 29.6	22 21.3	22 12.6	22 3.4	21 53.9	21 43.9	21 33.5	21 22.7	21 11.5	21 0.0	28 32	28 32
32		28	21 52.4	21 45.4	21 38.0	21 30.3	21 22.1	21 13.5	21 4.5	20 55.1	20 45.4	20 35.2	20 24.6	20 13.7	20 2.5	32 28	32 28
36		24	20 52.8	20 45.8	20 38.5	20 30.9	20 22.8	20 14.4	20 5.5	19 56.3	19 46.7	19 36.8	19 26.4	19 15.8	19 4.8	36 24	36 24
40		20	19 53.1	19 46.3	19 39.1	19 31.5	19 23.5	19 15.2	19 6.5	18 57.5	18 48.1	18 38.3	18 28.2	18 17.8	18 7.1	40 20	40 20
44		16	18 53.5	18 46.7	18 39.5	18 32.0	18 24.2	18 16.0	18 7.5	17 58.6	17 49.4	17 39.9	17 29.9	17 19.8	17 9.4	44 16	44 16
48		12	17 53.9	17 47.1	17 40.0	17 32.6	17 24.9	17 16.8	17 8.4	16 59.7	16 50.8	16 41.4	16 31.7	16 21.7	16 11.6	48 12	48 12
52		8	16 54.2	16 47.5	16 40.5	16 33.1	16 25.5	16 17.6	16 9.3	16 0.8	15 52.0	15 42.9	15 33.4	15 23.7	15 13.8	52 8	52 8
56		4	15 54.6	15 47.9	15 41.0	15 33.7	15 26.1	15 18.3	15 10.3	15 1.9	14 53.2	14 44.3	14 35.1	14 25.6	14 15.9	4 56	4 56
0	19	0	14 54.9	14 48.3	14 41.4	14 34.2	14 26.8	14 19.1	14 11.1	14 2.9	13 54.4	13 45.7	13 36.7	13 27.4	13 18.0	5 0	7 0
4	18	56	13 55.3	13 48.7	13 41.8	13 34.8	13 27.4	13 19.8	13 12.0	13 3.9	12 55.7	12 47.1	12 38.2	12 29.2	12 20.1	4 56	6 56
8		52	12 55.6	12 49.1	12 42.3	12 35.3	12 28.0	12 20.5	12 12.9	12 5.0	11 56.8	11 48.4	11 39.8	11 31.0	11 22.1	8 52	8 52
12		48	11 56.0	11 49.5	11 42.7	11 35.8	11 28.6	11 21.2	11 13.7	11 5.9	10 57.9	10 49.8	10 41.3	10 32.7	10 24.0	12 48	12 48
16		44	10 56.4	10 49.8	10 43.1	10 36.3	10 29.2	10 21.9	10 14.5	10 6.9	9 59.1	9 51.0	9 42.8	9 34.4	9 26.0	16 44	16 44
20		40	9 56.7	9 50.1	9 43.5	9 36.8	9 29.8	9 22.6	9 15.3	9 7.8	9 0.1	8 52.3	8 44.3	8 36.1	8 27.9	20 40	20 40
24		36	8 57.0	8 50.6	8 44.0	8 37.2	8 30.3	8 23.3	8 16.1	8 8.7	8 1.2	7 53.5	7 45.7	7 37.7	7 29.7	24 36	24 36
28		32	7 57.4	7 50.9	7 44.4	7 37.7	7 30.9	7 23.9	7 16.8	7 9.6	7 2.3	6 54.7	6 47.1	6 39.3	6 31.6	28 32	28 32
32		28	6 57.7	6 51.3	6 44.8	6 38.2	6 31.4	6 24.5	6 17.6	6 10.5	6 3.3	5 56.0	5 48.5	5 40.9	5 33.4	32 28	32 28
36		24	5 58.0	5 51.6	5 45.2	5 38.6	5 32.0	5 25.2	5 18.3	5 11.4	5 4.3	4 57.1	4 49.8	4 42.5	4 35.2	36 24	36 24
40		20	4 58.4	4 52.0	4 45.6	4 39.0	4 32.5	4 25.8	4 19.0	4 12.2	4 5.3	3 58.3	3 51.2	3 44.0	3 36.9	40 20	40 20
44		16	3 58.6	3 52.4	3 45.9	3 39.5	3 33.0	3 26.4	3 19.8	3 13.0	3 6.2	2 59.4	2 52.5	2 45.6	2 38.7	44 16	44 16
48		12	2 59.0	2 52.7	2 46.3	2 39.9	2 33.5	2 27.0	2 20.4	2 13.9	2 7.2	2 0.5	1 53.8	1 47.1	1 40.4	48 12	48 12
52		8	1 59.4	1 53.1	1 46.7	1 40.3	1 34.0	1 27.5	1 21.1	1 14.6	1 8.2	1 1.6	0 55.1	0 48.6	0 42.0	52 8	52 8
56		4	0 59.7	0 53.3	0 47.1	0 40.8	0 34.5	0 28.1	0 21.8	0 15.4	0 9.1	0 2.8	0 3.7	0 10.1	0 16.3	5 56	4 56
0	18	0	0 0.0	0 6.3	0 12.6	0 18.8	0 25.1	0 31.3	0 37.5	0 43.8	0 50.0	0 56.2	1 2.4	1 8.5	1 14.7	6 0	6 0

The heavy zigzag line is the horizon line and separates contrary names from same names.

LATITUDE 6°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.			
		Declination															
Declination														Declination			
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.		
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.		
15 0	21 0	41 25.7	41 4.5	40 42.5	40 19.7	39 56.2	39 31.9	39 7.0	38 41.2	38 14.9	37 47.8	37 20.2	36 51.9	3 0	9 0		
4	20 56	40 30.8	40 10.1	39 48.6	39 26.4	39 3.4	38 39.8	38 15.4	37 50.3	37 24.6	36 58.1	36 31.1	36 3.5	4	8 56		
8	52	39 35.7	39 15.5	38 54.6	38 32.9	38 10.4	37 47.4	37 23.6	36 59.1	36 34.0	36 8.1	35 41.8	35 14.9	8	52		
12	48	38 40.4	38 20.8	38 0.3	37 39.1	37 17.2	36 54.7	36 31.6	36 7.7	35 43.2	35 17.9	34 52.2	34 25.9	12	48		
16	44	37 45.1	37 25.8	37 5.9	36 45.2	36 23.8	36 1.8	35 39.2	35 15.9	34 52.0	34 27.4	34 2.3	33 36.6	16	44		
20	40	36 49.4	36 30.8	36 11.2	35 51.1	35 30.2	35 8.8	34 46.7	34 24.0	34 0.7	33 36.7	33 12.2	32 47.1	20	40		
24	36	35 53.8	35 35.4	35 16.5	34 56.7	34 36.4	34 15.5	33 54.0	33 31.8	33 9.1	32 45.7	32 21.8	31 57.3	24	36		
28	32	34 57.9	34 40.0	34 21.5	34 2.4	33 42.4	33 22.1	33 1.1	32 39.4	32 17.3	31 54.4	31 31.1	31 7.3	28	32		
32	28	34 1.9	33 44.5	33 26.4	33 7.7	32 48.3	32 28.4	32 8.0	31 46.8	31 25.2	31 2.9	30 40.2	30 17.0	32	28		
36	24	33 5.8	32 48.8	32 31.2	32 12.9	31 54.0	31 34.7	31 14.6	30 54.1	30 33.0	30 11.2	29 49.1	29 26.4	36	24		
40	20	32 9.6	31 53.0	31 35.8	31 18.0	30 59.6	30 40.6	30 21.2	30 1.1	29 40.6	29 19.4	28 57.8	28 35.7	40	20		
44	16	31 13.3	30 57.1	30 40.3	30 22.9	30 5.0	29 46.5	29 27.6	29 8.0	28 47.9	28 27.3	28 6.3	27 44.7	44	16		
48	12	30 16.9	30 1.1	29 44.7	29 27.8	29 10.2	28 52.3	28 33.8	28 14.7	27 55.2	27 35.0	27 14.6	26 53.5	48	12		
52	8	29 20.4	29 5.0	28 48.9	28 32.4	28 15.4	27 57.8	27 39.8	27 21.2	27 2.2	26 42.6	26 22.6	26 2.2	52	8		
15 56	4	28 23.8	28 8.7	27 53.1	27 37.0	27 20.3	27 3.3	26 45.7	26 27.6	26 9.1	25 50.0	25 30.6	25 10.6	3 56	4		
16 0	20 0	27 27.1	27 12.4	26 57.2	26 41.5	26 25.2	26 8.5	25 51.5	25 33.8	25 15.8	24 57.2	24 38.3	24 19.0	4 0	8 0		
4	19 56	26 30.3	26 16.0	26 1.1	25 45.8	25 30.0	25 13.8	24 57.1	24 39.9	24 22.4	24 4.3	23 45.9	23 27.0	4	7 56		
8	52	25 33.4	25 19.5	25 5.0	24 50.0	24 34.6	24 18.9	24 2.6	23 45.9	23 28.8	23 11.2	22 53.4	22 35.0	8	52		
12	48	24 36.5	24 22.9	24 8.7	23 54.2	23 39.2	23 23.8	23 8.0	22 51.7	22 35.1	22 18.0	22 0.6	21 42.8	12	48		
16	44	23 39.5	23 26.2	23 12.4	22 58.3	22 43.6	22 28.6	22 13.3	21 57.5	21 41.3	21 24.6	21 7.8	20 50.4	16	44		
20	40	22 42.4	22 29.4	22 16.0	22 2.2	21 48.0	21 33.4	21 18.5	21 3.1	20 47.4	20 31.1	20 14.7	19 58.0	20	40		
24	36	21 45.2	21 32.6	21 19.5	21 6.1	20 52.2	20 38.1	20 23.5	20 8.6	19 53.3	19 37.6	19 21.6	19 5.3	24	36		
28	32	20 48.0	20 35.7	20 22.9	20 9.9	19 56.4	19 42.6	19 28.5	19 14.0	18 59.1	18 43.9	18 28.4	18 12.5	28	32		
32	28	19 50.7	19 38.7	19 26.3	19 13.6	19 0.5	18 47.1	18 33.4	18 19.3	18 4.9	17 50.0	17 35.0	17 19.7	32	28		
36	24	18 53.4	18 41.6	18 29.6	18 17.2	18 4.5	17 51.5	17 38.1	17 24.4	17 10.5	16 56.1	16 41.6	16 26.6	36	24		
40	20	17 56.0	17 44.6	17 32.8	17 20.8	17 8.4	16 55.7	16 42.8	16 29.5	16 16.0	16 2.1	15 47.9	15 33.5	40	20		
44	16	16 58.6	16 47.5	16 36.0	16 24.3	16 12.2	16 0.0	15 47.4	15 34.5	15 21.4	15 7.9	14 54.3	14 40.3	44	16		
48	12	16 1.0	15 50.3	15 39.1	15 27.7	15 16.0	15 4.1	14 51.9	14 39.4	14 26.7	14 13.7	14 0.5	13 47.0	48	12		
52	8	15 3.5	14 53.0	14 42.1	14 31.1	14 19.7	14 8.1	13 56.4	13 44.3	13 32.0	13 19.4	13 6.6	12 53.5	52	8		
16 56	4	14 5.9	13 55.6	13 45.1	13 34.4	13 23.4	13 12.2	13 0.8	12 49.0	12 37.2	12 24.9	12 12.6	12 0.1	4 56	4		
17 0	19 0	13 8.2	12 58.3	12 48.1	12 37.6	12 27.0	12 16.1	12 5.1	11 53.7	11 42.2	11 30.4	11 18.5	11 6.4	5 0	7 0		
4	18 56	12 10.5	12 0.9	11 50.9	11 40.9	11 30.5	11 20.0	11 9.3	10 58.4	10 47.2	10 35.9	10 24.4	10 12.7	4	6 56		
8	52	11 12.8	11 3.4	10 53.8	10 43.9	10 33.9	10 23.8	10 13.4	10 2.9	9 52.2	9 41.2	9 30.1	9 18.9	8	52		
12	48	10 15.0	10 5.9	9 56.6	9 47.1	9 37.3	9 27.5	9 17.5	9 7.4	8 57.1	8 46.5	8 35.8	8 25.1	12	48		
16	44	9 17.2	9 8.3	8 59.3	8 50.1	8 40.7	8 31.2	8 21.6	8 11.8	8 1.9	7 51.7	7 41.5	7 31.1	16	44		
20	40	8 19.3	8 10.8	8 2.0	7 53.1	7 44.0	7 34.9	7 25.6	7 16.1	7 6.6	6 56.9	6 47.1	6 37.1	20	40		
24	36	7 21.5	7 13.1	7 4.6	6 56.1	6 47.3	6 38.5	6 29.6	6 20.4	6 11.3	6 1.9	5 52.5	5 43.0	24	36		
28	32	6 23.6	6 15.5	6 7.3	5 59.0	5 50.5	5 42.0	5 33.4	5 24.7	5 15.9	5 6.9	4 57.9	4 48.9	28	32		
32	28	5 25.6	5 17.8	5 9.9	5 1.8	4 53.7	4 45.5	4 37.3	4 28.9	4 20.5	4 11.9	4 3.3	3 54.7	32	28		
36	24	4 27.6	4 20.1	4 12.4	4 4.7	3 56.8	3 49.0	3 41.0	3 33.1	3 25.0	3 16.8	3 8.7	3 0.4	36	24		
40	20	3 29.6	3 22.3	3 14.9	3 7.5	2 59.9	2 52.4	2 44.8	2 37.2	2 29.5	2 21.7	2 13.9	2 6.1	40	20		
44	16	2 31.6	2 24.5	2 17.4	2 10.2	2 3.0	1 55.8	1 48.5	1 41.2	1 33.9	1 26.5	1 19.1	1 11.8	44	16		
48	12	1 33.5	1 26.7	1 19.8	1 12.9	1 6.0	0 59.1	0 52.2	0 45.2	0 38.3	0 31.2	0 24.3	0 17.3	48	12		
52	8	0 35.4	0 28.8	0 22.2	0 15.6	0 9.0	0 2.4	0 4.2	0 10.8	0 17.4	0 24.0	0 30.6	0 37.1	52	8		
17 56	4	0 22.7	0 29.0	0 35.4	0 41.7	0 48.1	0 54.3	1 0.6	1 6.8	1 13.0	1 19.4	1 25.5	1 31.6	5 56	4		
18 0	18 0	1 20.8	1 27.0	1 33.0	1 39.1	1 45.0	1 51.1	1 57.0	2 3.0	2 8.8	2 14.6	2 20.4	2 26.2	6 0	6 0		

LATITUDE 7°.

Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.														Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°					
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	83	0.0	84	0.0	85	0.0	86	0.0	87	0.0	88	0.0	89	0.0	90	0.0	89	0.0
23	56	82	55.8	83	55.1	84	54.1	85	52.7	86	50.4	87	46.0	88	35.0	89	0.5	88	35.5
	52	82	43.2	83	40.6	84	37.0	85	31.8	86	24.0	87	10.8	87	46.6	88	0.9	87	46.7
	48	82	23.2	83	17.7	84	10.5	85	0.4	85	46.0	86	24.5	86	51.4	87	1.4	86	51.7
	44	81	56.6	82	47.6	83	36.2	84	21.2	85	0.8	85	32.8	85	54.1	86	1.8	85	54.6
	40	81	24.3	82	11.8	82	56.3	83	36.7	84	11.3	84	38.4	84	55.9	85	2.2	84	56.6
	36	80	47.4	81	31.4	82	12.2	82	43.5	83	19.0	83	42.4	83	57.3	84	2.7	83	58.1
	32	80	6.8	80	47.7	81	25.0	81	57.8	82	24.8	82	45.4	82	58.4	83	3.1	82	59.3
	28	79	23.1	80	1.0	80	35.2	81	5.0	81	29.4	81	47.8	81	59.3	82	3.6	82	0.4
	24	78	37.0	79	12.3	79	43.8	80	11.0	80	33.1	80	49.7	81	0.1	81	4.0	81	1.3
	20	77	48.8	78	21.7	78	50.9	79	16.0	79	36.3	79	51.4	80	0.8	80	4.5	80	2.2
	16	76	59.1	77	29.9	77	57.1	78	20.3	78	38.8	78	52.5	79	1.5	79	4.9	79	3.1
	12	76	8.0	76	36.9	77	2.5	77	24.1	77	40.9	77	53.8	78	2.4	78	5.4	78	3.9
	8	75	15.8	75	43.0	76	6.8	76	27.1	76	43.1	76	55.0	77	2.9	77	5.8	77	4.6
	4	74	22.7	74	48.3	75	10.7	75	29.6	75	44.8	75	56.1	76	3.3	76	6.3	76	5.1
23	0	73	28.9	73	53.2	74	14.2	74	32.0	74	46.2	74	56.9	75	4.0	75	6.7	75	5.7
22	56	72	34.4	72	57.4	73	17.5	73	34.2	73	47.6	73	57.6	74	4.5	74	7.2	74	6.5
	52	71	39.3	72	1.1	72	20.1	72	36.2	72	48.8	72	58.4	73	4.8	73	7.7	73	7.1
	48	70	43.7	71	4.6	71	22.6	71	38.0	71	50.1	71	59.3	72	5.3	72	8.1	72	7.6
	44	69	47.8	70	7.6	70	24.9	70	39.5	70	51.3	71	0.0	71	5.8	71	8.6	71	8.3
	40	68	51.5	69	10.5	69	27.0	69	41.1	69	52.2	70	0.6	70	6.4	70	9.1	70	8.9
	36	67	54.8	68	13.1	68	29.0	68	42.5	68	53.0	69	1.2	69	6.9	69	9.7	69	9.5
	32	66	58.0	67	15.5	67	30.7	67	43.6	67	54.0	68	1.8	68	7.4	68	10.1	68	10.3
	28	66	0.8	66	17.6	66	32.4	66	44.8	66	54.8	67	2.5	67	7.9	67	10.6	67	10.8
	24	65	3.5	65	19.7	65	33.9	65	45.9	65	55.5	66	3.0	66	8.4	66	11.0	66	11.4
	20	64	6.0	64	21.7	64	35.4	64	47.0	64	56.3	65	3.5	65	8.7	65	11.5	65	11.9
	16	63	8.3	63	23.4	63	36.7	63	48.0	63	57.0	64	4.1	64	9.2	64	11.9	64	12.6
	12	62	10.4	62	25.2	62	37.9	62	48.9	62	57.8	63	4.6	63	9.6	63	12.3	63	13.2
	8	61	12.4	61	26.8	61	39.2	61	49.8	61	58.4	62	5.1	62	10.0	62	12.9	62	13.6
	4	60	14.3	60	28.2	60	40.3	60	50.7	60	58.9	61	5.6	61	10.5	61	13.2	61	14.3
22	0	59	16.1	59	29.5	59	41.4	59	51.4	59	59.6	60	6.1	60	10.9	60	13.9	60	14.8
21	56	58	17.8	58	30.9	58	42.4	58	52.2	59	0.2	59	6.6	59	11.3	59	14.3	59	15.4
	52	57	19.4	57	32.1	57	43.3	57	52.9	58	0.8	58	7.1	58	11.9	58	14.7	58	16.0
	48	56	20.9	56	33.3	56	44.3	56	53.6	57	1.4	57	7.6	57	12.2	57	15.3	57	16.5
	44	55	22.3	55	34.5	55	45.2	55	54.4	56	1.9	56	8.0	56	12.8	56	15.7	56	17.2
	40	54	23.7	54	35.5	54	46.0	54	55.0	55	2.4	55	8.5	55	13.2	55	16.2	55	17.7
	36	53	25.0	53	36.6	53	46.8	53	55.6	54	3.0	54	8.9	54	13.6	54	16.7	54	18.4
	32	52	26.2	52	37.5	52	47.5	52	56.3	53	3.5	53	9.4	53	14.1	53	17.2	53	18.9
	28	51	27.4	51	38.5	51	48.3	51	56.9	52	4.0	52	9.8	52	14.5	52	17.7	52	19.6
	24	50	28.5	50	39.4	50	49.1	50	57.5	51	4.5	51	10.3	51	15.0	51	18.2	51	20.1
	20	49	29.6	49	40.2	49	49.7	49	58.1	50	4.9	50	10.7	50	15.4	50	18.7	50	20.7
	16	48	30.6	48	41.1	48	50.4	48	58.6	49	5.5	49	11.2	49	15.9	49	19.2	49	21.4
	12	47	31.6	47	41.9	47	51.1	47	59.1	48	5.9	48	11.7	48	16.3	48	19.8	48	21.9
	8	46	32.6	46	42.7	46	51.7	46	59.7	47	6.4	47	12.1	47	16.8	47	20.2	47	22.6
	4	45	33.6	45	43.5	45	52.3	46	0.2	46	6.9	46	12.5	46	17.3	46	20.8	46	23.1
21	0	44	34.5	44	44.2	44	53.0	45	0.7	45	7.4	45	13.0	45	17.7	45	21.3	45	23.8

LATITUDE 7°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
24 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	73 0 0	72 0 0	0 0	0 0
23 56	83 55 2	82 55 9	81 56 4	80 56 8	79 57 1	78 57 4	77 57 6	76 58 0	75 57 9	74 58 1	73 58 3	72 58 3	71 58 3	4	4
52	83 41 1	82 43 7	81 45 8	80 47 3	79 48 7	78 49 5	77 50 5	76 51 5	75 52 0	74 52 8	73 53 0	72 53 4	71 53 4	8	8
48	83 18 7	82 24 2	81 28 6	80 31 9	79 34 8	78 37 0	77 39 0	76 40 7	75 42 3	74 43 4	73 44 4	72 45 3	71 45 3	12	12
44	82 49 4	81 58 2	81 5 3	80 11 0	79 15 8	78 19 6	77 23 1	76 26 2	75 28 5	74 30 7	73 32 6	72 34 3	71 34 3	16	16
40	82 14 3	81 26 7	80 36 8	79 45 3	78 52 2	77 58 0	77 3 2	76 7 6	75 11 4	74 14 8	73 17 5	72 20 1	71 20 1	20	20
36	81 34 7	80 50 7	80 3 9	79 15 2	78 24 6	77 32 5	76 39 5	75 45 4	74 50 8	73 55 3	72 59 2	72 3 2	71 3 2	24	24
32	80 51 7	80 10 9	79 27 0	78 41 4	77 53 3	77 3 4	76 12 2	75 20 1	74 27 2	73 33 0	72 38 3	71 43 3	70 43 3	28	28
28	80 5 8	79 28 0	78 47 7	78 4 2	77 18 6	76 31 0	75 42 0	74 51 9	74 0 2	73 7 8	72 14 6	71 20 9	70 20 9	32	32
24	79 18 1	78 43 3	78 5 0	77 24 4	76 41 1	75 55 8	75 9 0	74 20 5	73 31 0	72 40 3	71 48 4	70 56 0	69 56 0	36	36
20	78 28 5	77 55 9	77 20 4	76 42 2	76 1 2	75 18 2	74 33 3	73 47 1	72 59 0	72 9 9	71 19 6	70 28 9	69 28 9	40	40
16	77 37 4	77 6 9	76 34 1	75 58 1	75 19 4	74 38 3	73 55 5	73 11 2	72 25 1	71 37 7	70 48 9	69 59 5	68 59 5	44	44
12	76 45 2	76 17 3	75 46 0	75 12 2	74 35 7	73 56 6	73 15 7	72 33 2	71 49 0	71 3 2	70 16 1	69 28 1	68 28 1	48	48
8	75 52 1	75 25 9	74 56 9	74 24 9	73 50 4	73 13 3	72 34 3	71 53 5	71 10 9	70 26 9	69 41 4	68 55 0	67 55 0	52	52
4	74 58 3	74 34 0	74 6 5	73 36 4	73 3 6	72 28 5	71 51 3	71 12 2	70 31 4	69 49 1	69 5 2	68 20 2	67 20 2	0 56	0 56
23 0	74 3 8	73 41 0	73 15 4	72 46 9	72 15 8	71 42 3	71 6 9	70 29 5	69 50 3	69 9 5	68 27 1	67 43 7	66 43 7	1 0	1 0
22 56	73 8 9	72 47 4	72 23 2	71 56 3	71 26 9	70 55 1	70 21 3	69 45 6	69 8 1	68 28 8	67 47 7	67 5 9	66 5 9	4	4
52	72 13 7	71 53 3	71 30 5	71 4 9	70 37 2	70 6 9	69 34 5	69 0 5	68 24 4	67 46 7	67 2 6	66 26 6	65 26 6	8	8
48	71 17 9	70 58 9	70 37 1	70 13 2	69 46 7	69 17 8	68 47 0	68 14 3	67 39 6	67 3 3	66 25 5	65 46 2	64 46 2	12	12
44	70 21 8	70 3 8	69 43 4	69 20 6	68 55 3	68 28 0	67 58 5	67 27 1	66 54 0	66 19 2	65 42 6	65 4 8	64 4 8	16	16
40	69 25 4	69 8 4	68 49 2	68 27 5	68 3 5	67 37 3	67 9 1	66 39 3	66 7 4	65 34 0	64 58 6	64 22 3	63 22 3	20	20
36	68 28 8	68 12 8	67 54 6	67 34 1	67 11 2	66 46 0	66 19 3	65 50 6	65 20 1	64 47 9	64 13 9	63 38 8	62 38 8	24	24
32	67 32 0	67 16 9	66 59 5	66 39 9	66 18 2	65 54 5	65 28 7	65 1 2	64 32 0	64 1 0	63 28 3	62 54 4	61 54 4	28	28
28	66 35 1	66 20 8	66 4 2	65 45 6	65 24 9	65 2 2	64 37 6	64 11 3	63 43 2	63 13 4	62 42 0	62 9 3	61 9 3	32	32
24	65 38 0	65 24 3	65 8 7	64 51 0	64 31 2	64 9 5	63 46 1	63 20 9	62 53 8	62 25 3	61 55 0	61 23 5	60 23 5	36	36
20	64 40 7	64 27 7	64 13 0	63 56 2	63 37 2	63 16 5	62 54 0	62 29 9	62 4 0	61 36 5	61 7 2	60 37 0	59 37 0	40	40
16	63 43 2	63 31 0	63 16 8	63 0 9	62 43 0	62 23 1	62 1 7	61 38 4	61 13 6	60 47 2	60 19 0	59 49 7	58 49 7	44	44
12	62 45 8	62 34 1	62 20 7	62 5 5	61 48 4	61 29 4	61 8 7	60 46 6	60 22 6	59 57 4	59 30 3	59 2 0	58 2 0	48	48
8	61 48 2	61 37 2	61 24 4	61 9 9	60 53 5	60 35 4	60 15 7	59 54 3	59 31 4	59 7 0	58 41 0	58 13 8	57 13 8	52	52
4	60 50 5	60 40 0	60 27 9	60 14 1	59 58 5	59 41 1	59 22 2	59 1 9	58 39 8	58 16 3	57 51 2	57 25 0	56 25 0	1 56	1 56
22 0	59 52 7	59 42 8	59 31 3	59 18 1	59 3 2	58 46 6	58 28 5	58 9 0	57 47 9	57 25 3	57 1 0	56 35 8	55 35 8	2 0	2 0
21 56	58 54 9	58 45 5	58 34 5	58 22 0	58 7 7	57 51 9	57 34 5	57 15 8	56 55 5	56 33 8	56 10 5	55 46 2	54 46 2	4	4
52	57 57 0	57 48 0	57 37 6	57 25 6	57 12 1	56 57 0	56 40 3	56 22 4	56 5 6	55 42 1	55 19 7	55 56 2	54 56 2	8	8
48	56 58 9	56 50 5	56 40 6	56 29 3	56 16 3	56 1 9	55 46 0	55 28 6	55 10 0	54 49 9	54 28 4	54 5 9	53 5 9	12	12
44	56 0 9	55 52 9	55 43 6	55 32 8	55 20 4	55 6 5	54 51 3	54 34 8	54 16 8	53 57 6	53 36 8	53 15 2	52 15 2	16	16
40	55 2 8	54 55 3	54 46 4	54 36 1	54 24 3	54 11 0	53 56 5	53 40 7	53 23 5	53 5 0	52 45 0	52 24 1	51 24 1	20	20
36	54 4 8	53 57 6	53 49 1	53 39 3	53 28 1	53 15 5	53 1 6	52 46 4	52 29 9	52 12 2	51 53 0	51 32 8	50 32 8	24	24
32	53 6 6	52 59 9	52 51 8	52 42 5	52 31 8	52 19 8	52 6 5	51 52 0	51 36 1	51 19 1	51 0 7	50 41 3	49 41 3	28	28
28	52 8 4	52 2 1	51 54 5	51 45 6	51 35 4	51 23 9	51 11 2	50 57 3	50 42 2	50 25 8	50 8 2	49 49 5	48 49 5	32	32
24	51 10 2	51 4 1	50 57 0	50 48 7	50 38 9	50 28 0	50 15 8	50 2 6	49 48 0	49 32 4	49 15 3	48 57 5	47 57 5	36	36
20	50 11 9	50 6 3	49 59 5	49 51 6	49 42 4	49 31 9	49 20 4	49 7 6	48 53 8	48 38 8	48 22 4	48 5 2	47 5 2	40	40
16	49 13 7	49 8 3	49 2 0	48 54 4	48 45 7	48 35 8	48 24 8	48 12 6	47 59 3	47 45 0	47 29 3	47 12 8	46 12 8	44	44
12	48 15 3	48 10 4	48 4 4	47 57 3	47 49 0	47 39 5	47 29 1	47 17 4	47 4 8	46 51 0	46 36 0	46 20 2	45 20 2	48	48
8	47 17 0	47 12 4	47 6 8	47 0 1	46 52 2	46 43 2	46 33 2	46 22 3	46 10 0	45 56 9	45 42 5	45 27 4	44 27 4	52	52
4	46 18 7	46 14 4	46 9 1	46 2 8	45 55 4	45 46 9	45 37 4	45 26 9	45 15 3	45 2 6	44 48 9	44 34 3	43 34 3	2 56	2 56
21 0	45 20 3	45 16 4	45 11 4	45 5 5	44 58 5	44 50 4	44 41 4	44 31 4	44 20 3	44 8 3	43 55 1	43 41 2	42 41 2	3 0	3 0

LATITUDE 7°.																	
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°	
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	44	34.5	44	44.2	44	53.0	45	0.7	45	7.4	45	13.0	45	17.7	45	21.3
20	56	43	35.4	43	44.9	43	53.6	44	1.2	44	7.8	44	13.5	44	18.2	44	21.7
	52	42	36.2	42	45.6	42	54.2	43	1.8	43	8.3	43	13.9	43	18.6	43	22.3
	48	41	37.0	41	46.3	41	54.7	42	2.2	42	8.7	42	14.3	42	19.1	42	22.7
	44	40	37.8	40	47.0	40	55.3	41	2.7	41	9.2	41	14.8	41	19.6	41	23.4
	40	39	38.6	39	47.6	39	55.8	40	3.2	40	9.6	40	15.3	40	20.1	40	23.9
	36	38	39.3	38	48.3	38	56.4	39	3.7	39	10.1	39	15.7	39	20.6	39	24.5
	32	37	40.0	37	48.8	37	56.9	38	4.2	38	10.5	38	16.1	38	21.0	38	25.0
	28	36	40.7	36	49.5	36	57.4	37	4.6	37	11.0	37	16.6	37	21.6	37	25.6
	24	35	41.4	35	50.0	35	57.9	36	5.1	36	11.4	36	17.1	36	22.0	36	26.1
	20	34	42.1	34	50.6	34	58.4	35	5.6	35	11.9	35	17.5	35	22.6	35	26.6
	16	33	42.7	33	51.2	33	58.9	34	6.0	34	12.3	34	18.0	34	23.0	34	27.2
	12	32	43.4	32	51.7	32	59.4	33	6.5	33	12.8	33	18.5	33	23.6	33	27.8
	8	31	44.0	31	52.3	31	59.9	32	6.9	32	13.2	32	18.9	32	24.1	32	28.4
	4	30	44.6	30	52.8	31	0.4	31	7.4	31	13.7	31	19.4	31	24.5	31	29.0
20	0	29	45.2	29	53.3	30	0.8	30	7.9	30	14.1	30	19.8	30	25.1	30	29.6
19	56	28	45.9	28	53.8	29	1.4	29	8.3	29	14.6	29	20.3	29	25.6	29	30.2
	52	27	46.4	27	54.4	28	1.8	28	8.7	28	15.0	28	20.8	28	26.1	28	30.8
	48	26	47.0	26	54.8	27	2.3	27	9.1	27	15.5	27	21.2	27	26.7	27	31.4
	44	25	47.5	25	55.3	26	2.7	26	9.6	26	15.9	26	21.8	26	27.2	26	32.0
	40	24	48.0	24	55.8	25	3.2	25	10.0	25	16.4	25	22.3	25	27.8	25	32.6
	36	23	48.5	23	56.3	24	3.6	24	10.6	24	16.9	24	22.8	24	28.3	24	33.3
	32	22	49.1	22	56.8	23	4.1	23	11.0	23	17.3	23	23.2	23	28.8	23	33.9
	28	21	49.7	21	57.3	22	4.6	22	11.4	22	17.7	22	23.8	22	29.4	22	34.5
	24	20	50.2	20	57.8	21	5.0	21	11.8	21	18.2	21	24.3	21	30.0	21	35.2
	20	19	50.7	19	58.3	20	5.4	20	12.3	20	18.7	20	24.8	20	30.6	20	35.9
	16	18	51.2	18	58.7	19	5.9	19	12.7	19	19.2	19	25.3	19	31.1	19	36.5
	12	17	51.7	17	59.1	18	6.4	18	13.2	18	19.7	18	25.8	18	31.7	18	37.1
	8	16	52.2	16	59.6	17	6.8	17	13.7	17	20.2	17	26.3	17	32.3	17	37.8
	4	15	52.6	16	0.0	16	7.2	16	14.2	16	20.7	16	26.9	16	32.9	16	38.5
19	0	14	53.1	15	0.5	15	7.7	15	14.6	15	21.1	15	27.4	15	33.6	15	39.2
18	56	13	53.6	14	1.0	14	8.1	14	15.0	14	21.6	14	28.0	14	34.2	14	40.0
	52	12	54.1	13	1.4	13	8.6	13	15.5	13	22.1	13	28.5	13	34.8	13	40.7
	48	11	54.6	12	1.9	12	9.0	12	16.0	12	22.6	12	29.1	12	35.4	12	41.5
	44	10	55.0	11	2.3	11	9.5	11	16.4	11	23.1	11	29.7	11	36.1	11	42.2
	40	9	55.5	10	2.8	10	9.9	10	16.9	10	23.7	10	30.3	10	36.7	10	42.9
	36	8	56.0	9	3.2	9	10.4	9	17.4	9	24.2	9	30.8	9	37.4	9	43.7
	32	7	56.5	8	3.7	8	10.9	8	17.9	8	24.7	8	31.4	8	38.1	8	44.4
	28	6	56.9	7	4.1	7	11.3	7	18.4	7	25.2	7	32.0	7	38.7	7	45.2
	24	5	57.4	6	4.6	6	11.8	6	18.9	6	25.8	6	32.6	6	39.4	6	46.0
	20	4	57.8	5	5.1	5	12.2	5	19.4	5	26.3	5	33.2	5	40.1	5	46.8
	16	3	58.2	4	5.5	4	12.7	4	19.9	4	26.9	4	33.9	4	40.8	4	47.7
	12	2	58.7	3	5.9	3	13.2	3	20.4	3	27.4	3	34.5	3	41.6	3	48.5
	8	1	59.1	2	6.4	2	13.7	2	20.9	2	28.0	2	35.2	2	42.3	2	49.3
	4	0	59.5	1	6.8	1	14.1	1	21.4	1	28.6	1	35.8	1	43.0	1	50.2
18	0	0	0.0	0	7.3	0	14.6	0	21.9	0	29.2	0	36.5	0	43.8	0	51.1

LATITUDE 7°.																	
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.			
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°				
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	45 20.3	45 16.4	45 11.4	45 5.5	44 58.5	44 50.4	44 41.4	44 31.4	44 20.3	44 8.3	43 55.1	43 41.2			3	0
20	56	44 21.9	44 18.3	44 13.7	44 8.2	44 1.6	43 53.9	43 45.3	43 35.9	43 25.3	43 13.8	43 1.3	42 47.9				4
	52	43 23.5	43 20.2	43 15.9	43 10.8	43 4.6	42 57.4	42 49.3	42 40.2	42 30.2	42 19.3	42 7.3	41 54.6				8
	48	42 25.2	42 22.0	42 18.2	42 13.4	42 7.5	42 0.7	41 53.1	41 44.5	41 35.0	41 24.7	41 13.3	41 1.0				12
	44	41 26.7	41 24.0	41 20.3	41 15.8	41 10.4	41 4.1	40 56.8	40 48.8	40 39.8	40 29.9	40 19.0	40 7.3				16
	40	40 28.3	40 25.8	40 22.4	40 18.4	40 13.3	40 7.3	40 0.5	39 53.0	39 44.4	39 35.1	39 24.6	39 13.6				20
	36	39 29.8	39 27.6	39 24.6	39 20.9	39 16.1	39 10.6	39 4.2	38 57.0	38 49.0	38 40.1	38 30.3	38 19.8				24
	32	38 31.3	38 29.4	38 26.8	38 23.3	38 19.0	38 13.8	38 7.8	38 1.1	37 53.5	37 45.1	37 35.8	37 25.9				28
	28	37 32.9	37 31.2	37 28.9	37 25.8	37 21.8	37 17.0	37 11.4	37 5.1	36 58.0	36 50.1	36 41.3	36 31.8				32
	24	36 34.5	36 33.1	36 31.0	36 28.2	36 24.6	36 20.0	36 14.9	36 9.0	36 2.3	35 55.0	35 46.6	35 37.7				36
	20	35 36.0	35 34.9	35 33.1	35 30.5	35 27.2	35 23.2	35 18.4	35 13.0	35 6.7	34 59.8	34 51.9	34 43.5				40
	16	34 37.6	34 36.7	34 35.2	34 32.9	34 29.9	34 26.3	34 21.9	34 16.8	34 11.0	34 4.5	33 57.1	33 49.3				44
	12	33 39.1	33 38.5	33 37.2	33 35.3	33 32.7	33 29.3	33 25.3	33 20.7	33 15.2	33 9.2	33 2.3	32 54.9				48
	8	32 40.7	32 40.3	32 39.3	32 37.7	32 35.3	32 32.4	32 28.7	32 24.5	32 19.5	32 13.9	32 7.5	32 0.5				52
	4	31 42.2	31 42.0	31 41.4	31 40.0	31 38.0	31 35.4	31 32.2	31 28.2	31 23.6	31 18.5	31 12.7	31 6.1			3	56
20	0	30 43.7	30 43.8	30 43.4	30 42.4	30 40.7	30 38.3	30 35.4	30 32.0	30 27.8	30 23.1	30 17.6	30 11.6			4	0
19	56	29 45.3	29 45.6	29 45.5	29 44.8	29 43.4	29 41.3	29 38.8	29 35.7	29 31.9	29 27.6	29 22.6	29 17.2				4
	52	28 46.8	28 47.4	28 47.5	28 47.0	28 46.0	28 44.3	28 42.1	28 39.4	28 36.0	28 32.2	28 27.6	28 22.5				8
	48	27 48.4	27 49.2	27 49.5	27 49.4	27 48.6	27 47.3	27 45.4	27 43.1	27 40.1	27 36.7	27 32.5	27 27.9				12
	44	26 49.9	26 51.0	26 51.6	26 51.7	26 51.2	26 50.2	26 48.7	26 46.8	26 44.2	26 41.1	26 37.4	26 33.3				16
	40	25 51.5	25 52.8	25 53.6	25 54.0	25 53.8	25 53.2	25 52.0	25 50.4	25 48.2	25 45.5	25 42.2	25 38.6				20
	36	24 53.0	24 54.5	24 55.7	24 56.3	24 56.5	24 56.1	24 55.4	24 54.1	24 52.2	24 50.0	24 47.1	24 43.9				24
	32	23 54.6	23 56.3	23 57.7	23 58.7	23 59.1	23 59.1	23 58.6	23 57.7	23 56.3	23 54.4	23 51.9	23 49.1				28
	28	22 56.2	22 58.1	22 59.8	23 0.2	23 1.8	23 2.0	23 1.9	23 1.3	23 0.3	22 58.8	22 56.7	22 54.4				32
	24	21 57.7	22 0.0	22 1.9	22 3.3	22 4.4	22 5.0	22 5.1	22 4.9	22 4.2	22 3.2	22 1.5	21 59.6				36
	20	20 59.3	21 1.8	21 3.9	21 5.7	21 7.0	21 7.9	21 8.4	21 8.6	21 8.3	21 7.6	21 6.3	21 4.9				40
	16	20 1.0	20 3.7	20 6.0	20 8.0	20 9.6	20 10.8	20 11.7	20 12.2	20 12.2	20 12.0	20 11.1	20 10.0				44
	12	19 2.6	19 5.5	19 8.1	19 10.4	19 12.3	19 13.8	19 14.9	19 15.8	19 16.2	19 16.3	19 15.9	19 15.2				48
	8	18 4.2	18 7.3	18 10.2	18 12.7	18 14.9	18 16.7	18 18.2	18 19.4	18 20.2	18 20.7	18 20.6	18 20.5				52
	4	17 5.8	17 9.2	17 12.3	17 15.1	17 17.6	17 19.7	17 21.5	17 23.0	17 24.1	17 25.0	17 25.4	17 25.7			4	56
19	0	16 7.5	16 11.1	16 14.5	16 17.5	16 20.2	16 22.7	16 24.8	16 26.6	16 28.2	16 29.3	16 30.2	16 30.8			5	0
18	56	15 9.2	15 12.9	15 16.6	15 19.9	15 22.9	15 25.6	15 28.1	15 30.3	15 32.2	15 33.8	15 35.0	15 36.0				4
	52	14 10.8	14 14.9	14 18.7	14 22.3	14 25.6	14 28.6	14 31.4	14 34.0	14 36.2	14 38.2	14 39.8	14 41.2				8
	48	13 12.5	13 16.8	13 20.9	13 24.7	13 28.3	13 31.6	13 34.8	13 37.7	13 40.2	13 42.6	13 44.6	13 46.4				12
	44	12 14.2	12 18.7	12 23.0	12 27.2	12 31.0	12 34.7	12 38.1	12 41.3	12 44.3	12 47.0	12 49.4	12 51.6				16
	40	11 15.9	11 20.7	11 25.2	11 29.6	11 33.8	11 37.7	11 41.5	11 45.0	11 48.3	11 51.4	11 54.2	11 56.8				20
	36	10 17.6	10 22.6	10 27.4	10 32.1	10 36.6	10 40.8	10 44.9	10 48.8	10 52.4	10 55.9	10 59.0	11 2.1				24
	32	9 19.4	9 24.6	9 29.7	9 34.7	9 39.4	9 43.9	9 48.3	9 52.5	9 56.5	10 0.3	10 3.9	10 7.3				28
	28	8 21.2	8 26.6	8 31.9	8 37.2	8 42.2	8 47.0	8 51.7	8 56.3	9 0.6	9 4.9	9 8.7	9 12.7				32
	24	7 23.0	7 28.7	7 34.3	7 39.7	7 45.0	7 50.1	7 55.1	8 0.0	8 4.8	8 9.3	8 13.7	8 17.9				36
	20	6 24.8	6 30.7	6 36.6	6 42.3	6 47.8	6 53.2	6 58.6	7 3.8	7 8.9	7 13.9	7 18.6	7 23.2				40
	16	5 26.7	5 32.8	5 38.9	5 44.9	5 50.7	5 56.4	6 2.1	6 7.7	6 13.1	6 18.5	6 23.5	6 28.6				44
	12	4 28.6	4 34.9	4 41.2	4 47.5	4 53.6	4 59.7	5 5.6	5 11.6	5 17.3	5 23.0	5 28.5	5 34.1				48
	8	3 30.4	3 37.0	3 43.6	3 50.1	3 56.6	4 2.9	4 9.2	4 15.5	4 21.6	4 27.7	4 33.5	4 39.5				52
	4	2 32.3	2 39.1	2 46.0	2 52.8	2 59.5	3 6.2	3 12.8	3 19.4	3 25.8	3 32.3	3 38.6	3 44.9			5	56
18	0	1 34.3	1 41.4	1 48.4	1 55.5	2 2.5	2 9.5	2 16.4	2 23.3	2 30.2	2 37.0	2 43.7	2 50.4			6	0

LATITUDE 7°.

Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE.														Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°					
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	83	0 0	82	0 0	81	0 0	80	0 0	79	0 0	78	0 0	77	0 0	76	0 0	75	0 0
23	56	82	55 8	81	56 3	80	56 7	79	57 0	78	57 2	77	57 4	76	57 6	75	57 9	74	58 0
	52	82	43 2	81	45 3	80	46 9	79	48 5	78	49 0	77	49 9	76	51 0	75	51 9	74	52 1
	48	82	23 2	81	27 5	80	31 0	79	33 9	78	35 8	77	37 7	76	39 8	75	41 4	74	42 3
	44	81	56 6	81	3 6	80	9 3	79	14 1	78	17 8	77	21 2	76	24 3	75	26 6	74	28 7
	40	81	24 3	80	34 3	79	42 6	78	49 5	77	55 2	77	0 3	76	4 6	75	8 5	74	11 6
	36	80	47 4	80	0 3	79	11 5	78	20 8	77	28 5	76	35 2	75	41 5	74	46 6	73	51 3
	32	80	6 8	79	22 8	78	36 7	77	48 4	76	57 9	76	6 8	75	14 7	74	21 7	73	27 6
	28	79	23 1	78	41 9	77	53 2	77	12 3	76	24 4	75	35 2	74	44 9	73	53 4	73	0 9
	24	78	37 0	77	58 4	77	17 0	76	33 5	75	47 8	75	0 6	74	12 2	73	22 3	72	31 4
	20	77	48 8	77	12 6	76	33 7	75	52 3	75	8 7	74	23 5	73	36 9	72	48 7	71	59 5
	16	76	59 1	76	25 2	75	48 3	75	9 1	74	27 4	73	44 0	72	59 4	72	13 0	71	25 2
	12	76	8 0	75	36 0	75	1 1	74	24 1	73	44 3	73	2 7	72	19 7	71	35 1	70	48 9
	8	75	15 8	74	45 7	74	12 6	73	37 3	72	59 4	72	19 6	71	38 2	70	55 1	70	10 7
	4	74	22 7	73	54 1	73	22 9	72	49 1	72	13 0	71	34 9	70	55 1	70	13 6	69	30 6
23	0	73	28 9	73	1 8	72	32 0	71	59 9	71	25 2	70	48 7	70	10 7	69	30 6	68	49 2
22	56	72	34 4	72	8 6	71	40 4	71	9 6	70	36 4	70	1 4	69	24 8	68	46 4	68	6 2
	52	71	39 3	71	14 8	70	47 8	70	18 4	69	46 6	69	13 0	68	37 8	68	0 8	67	22 0
	48	70	43 7	70	20 4	69	54 5	69	26 5	68	56 0	68	23 7	67	49 7	67	13 9	66	36 7
	44	69	47 8	69	25 4	69	0 7	68	33 7	68	4 6	67	33 6	67	0 8	66	26 4	65	50 2
	40	68	51 5	68	30 0	68	6 3	67	40 5	67	12 4	66	42 5	66	11 1	65	37 7	65	2 9
	36	67	54 8	67	34 1	67	11 6	66	46 7	66	19 6	65	50 9	65	20 6	64	48 5	64	14 6
	32	66	58 0	66	38 2	66	16 3	65	52 4	65	26 4	64	58 6	64	29 4	63	58 3	63	25 7
	28	66	0 8	65	41 7	65	20 7	64	57 7	64	32 6	64	5 9	63	37 5	63	7 5	62	36 0
	24	65	3 5	64	45 1	64	24 8	64	2 5	63	38 4	63	12 6	62	45 3	62	16 1	61	45 6
	20	64	6 0	63	48 3	63	28 6	63	7 2	62	43 7	62	18 8	61	52 4	61	24 3	60	54 5
	16	63	8 3	62	51 1	62	32 2	62	11 5	61	48 8	61	24 6	60	59 0	60	31 8	60	3 1
	12	62	10 4	61	53 8	61	35 4	61	15 4	60	53 6	60	30 1	60	5 3	59	38 8	59	11 1
	8	61	12 4	60	56 3	60	38 6	60	19 1	59	58 0	59	35 3	59	11 1	58	45 6	58	18 5
	4	60	14 3	59	58 8	59	41 5	59	22 6	59	2 0	58	40 1	58	16 7	57	51 8	57	25 6
22	0	59	16 1	59	1 0	58	44 3	58	25 9	58	6 0	57	44 6	57	21 9	56	57 9	56	32 3
21	56	58	17 8	58	3 1	57	46 8	57	29 1	57	9 7	56	48 9	56	26 9	56	3 5	55	38 7
	52	57	19 4	57	5 1	56	49 3	56	32 0	56	13 1	55	53 0	55	31 6	55	8 7	54	44 7
	48	56	20 9	56	7 0	55	51 6	55	34 8	55	16 5	54	56 9	54	36 0	54	13 9	53	50 3
	44	55	22 3	55	8 8	54	53 8	54	37 5	54	19 6	54	0 4	53	40 3	53	18 6	52	55 8
	40	54	23 7	54	10 4	53	55 9	53	39 9	53	22 5	53	4 0	52	44 2	52	23 2	52	0 9
	36	53	25 0	53	12 1	52	57 8	52	42 2	52	25 3	52	7 2	51	48 0	51	27 5	51	5 9
	32	52	26 2	52	13 5	51	59 6	51	44 5	51	28 0	51	10 4	50	51 6	50	31 7	50	10 6
	28	51	27 4	51	15 0	51	1 4	50	46 7	50	30 5	50	13 3	49	55 1	49	35 6	49	15 1
	24	50	28 5	50	16 4	50	3 2	49	48 7	49	33 0	49	16 2	48	58 4	48	39 4	48	19 4
	20	49	29 6	49	17 7	49	4 8	48	50 7	48	35 3	48	18 9	48	1 5	47	43 0	47	23 5
	16	48	30 6	48	19 0	48	6 3	47	52 5	47	37 6	47	21 5	47	4 6	46	46 5	46	27 4
	12	47	31 6	47	20 3	47	7 9	46	54 3	46	39 6	46	24 0	46	7 4	45	49 8	45	31 1
	8	46	32 6	46	21 5	46	9 3	45	56 0	45	41 6	45	26 4	45	10 2	44	52 9	44	34 8
	4	45	33 6	45	22 6	45	10 6	44	57 7	44	43 6	44	28 7	44	12 8	43	56 0	43	38 2
21	0	44	34 5	44	23 7	44	12 0	43	59 2	43	45 5	43	30 9	43	15 4	42	58 9	42	41 5

LATITUDE 7°.															
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.		
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°			
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	70 0'0	69 0'0	68 0'0	67 0'0	66 0'0	65 0'0	64 0'0	63 0'0	62 0'0	61 0'0	60 0'0	59 0'0	0 0	0	
23 56	69 58'5	68 58'5	67 58'6	66 58'7	65 58'8	64 58'8	63 58'8	62 59'0	61 58'9	60 59'0	59 58'9	58 59'1	4		
52	69 54'2	68 54'3	67 54'6	66 54'9	65 55'2	64 55'2	63 55'4	62 55'8	61 56'0	60 56'1	59 56'0	58 56'3	8		
48	69 46'9	68 47'2	67 47'0	66 48'5	65 49'1	64 49'5	63 49'9	62 50'5	61 50'8	60 51'2	59 51'3	58 51'7	12		
44	69 36'7	68 37'6	67 38'6	66 39'6	65 40'6	64 41'4	63 42'2	62 43'0	61 43'6	60 44'3	59 44'7	58 45'3	16		
40	69 23'6	68 25'3	67 26'8	66 28'3	65 29'7	64 31'0	63 32'2	62 33'4	61 34'4	60 35'4	59 36'1	58 37'1	20		
36	69 7'9	68 10'1	67 12'5	66 14'7	65 16'7	64 18'4	63 20'0	62 21'9	61 23'3	60 24'7	59 25'8	58 27'2	24		
32	68 49'5	67 52'6	66 55'9	65 58'8	65 1'4	64 3'6	63 5'9	62 8'2	61 10'2	60 12'1	59 13'7	58 15'4	28		
28	68 28'8	67 32'7	66 36'7	65 40'4	64 43'8	63 46'9	62 49'7	61 52'7	60 55'1	59 57'7	58 59'7	58 2'0	32		
24	68 5'6	67 10'7	66 15'4	65 19'9	64 24'2	63 28'0	62 31'7	61 35'2	60 38'4	59 41'3	58 44'1	57 46'8	36		
20	67 40'2	66 46'3	65 52'0	64 57'5	64 2'6	63 7'2	62 11'6	61 16'0	60 19'7	59 23'4	58 26'6	57 30'1	40		
16	67 12'6	66 19'7	65 26'6	64 33'1	63 39'1	62 44'5	61 49'7	60 54'8	59 59'4	59 3'7	58 7'7	57 11'6	44		
12	66 43'0	65 51'3	64 59'2	64 6'8	63 13'7	62 20'0	61 26'1	60 32'0	59 37'3	58 42'5	57 47'1	56 51'7	48		
8	66 11'5	65 21'1	64 30'1	63 38'6	62 46'6	61 53'9	61 0'8	60 7'5	59 13'6	58 19'7	57 24'9	56 30'3	52		
4	65 38'4	64 49'2	63 59'2	63 8'8	62 17'7	61 26'0	60 33'9	59 41'4	58 48'4	57 55'1	57 1'4	56 7'4	0 56		
23 0	65 3'5	64 15'4	63 26'7	62 37'3	61 47'3	60 56'5	60 5'4	59 13'9	58 21'7	57 29'3	56 36'2	55 43'0	1 0		
22 56	64 27'2	63 40'2	62 52'6	62 4'4	61 15'4	60 25'7	59 35'4	58 44'9	57 53'7	57 2'0	56 9'6	55 17'4	4		
52	63 49'5	63 3'6	62 17'2	61 30'0	60 42'1	59 53'3	59 4'0	58 14'5	57 24'1	56 33'3	55 41'9	54 50'4	8		
48	63 10'4	62 25'8	61 40'3	60 54'2	60 7'4	59 19'7	58 31'4	57 42'7	56 53'2	56 3'3	55 12'9	54 22'1	12		
44	62 30'0	61 46'5	61 2'3	60 17'2	59 31'4	58 44'8	57 57'5	57 9'7	56 21'2	55 32'2	54 42'6	53 52'7	16		
40	61 48'5	61 6'1	60 23'1	59 39'0	58 54'3	58 8'6	57 22'3	56 35'6	55 47'9	54 59'9	54 11'1	53 22'1	20		
36	61 6'0	60 24'7	59 42'6	58 59'8	58 16'0	57 31'3	56 46'0	56 0'2	55 13'6	54 26'4	53 38'5	52 50'3	24		
32	60 22'6	59 42'2	59 1'3	58 19'4	57 36'7	56 53'1	56 8'6	55 23'8	54 38'1	53 51'9	53 4'9	52 17'5	28		
28	59 38'1	58 59'0	58 18'9	57 38'0	56 56'3	56 13'7	55 30'3	54 46'4	54 1'6	53 16'3	52 30'2	51 43'7	32		
24	58 52'8	58 14'7	57 35'7	56 55'8	56 15'1	55 33'4	54 51'0	54 8'0	53 24'1	52 39'7	51 54'5	51 8'9	36		
20	58 6'8	57 29'5	56 51'7	56 12'8	55 32'9	54 52'2	54 10'7	53 28'7	52 45'8	52 2'2	51 17'9	50 33'2	40		
16	57 19'9	56 43'8	56 6'7	55 28'9	54 50'1	54 10'2	53 29'7	52 48'5	52 6'5	51 23'9	50 40'4	49 56'6	44		
12	56 32'6	55 57'3	55 21'2	54 44'1	54 6'3	53 27'5	52 47'8	52 7'5	51 26'4	50 44'7	50 2'1	49 19'1	48		
8	55 44'5	55 10'1	54 34'9	53 58'9	53 21'8	52 43'9	52 5'2	51 25'8	50 45'5	50 4'6	49 23'0	48 40'8	52		
4	54 55'7	54 22'3	53 48'1	53 12'8	52 36'7	51 59'6	51 21'8	50 43'4	50 3'9	49 23'9	48 43'0	48 1'7	1 56		
22 0	54 6'5	53 34'0	53 0'5	52 26'2	51 50'9	51 14'7	50 37'7	50 0'1	49 21'6	48 42'4	48 2'3	47 21'9	2 0		
21 56	53 16'8	52 45'0	52 12'4	51 39'0	51 4'6	50 29'2	49 53'0	49 16'2	48 38'6	48 0'2	47 21'0	46 41'4	4		
52	52 26'6	51 55'6	51 23'8	50 51'1	50 17'6	49 43'1	49 7'7	48 31'8	47 54'8	47 17'4	46 39'1	46 0'2	8		
48	51 35'9	51 5'8	50 34'7	50 2'9	49 30'1	48 56'4	48 21'9	47 46'6	47 10'6	46 33'9	45 56'4	45 18'4	12		
44	50 44'8	50 15'4	49 45'2	49 14'1	48 42'1	48 9'1	47 35'4	47 1'1	46 25'8	45 49'9	45 13'2	44 36'0	16		
40	49 53'3	49 24'7	48 55'1	48 24'8	47 53'6	47 21'4	46 48'5	46 14'9	45 40'5	45 5'3	44 29'3	43 52'9	20		
36	49 1'6	48 33'5	48 4'8	47 35'1	47 4'6	46 33'2	46 1'0	45 28'2	44 54'6	44 20'2	43 45'0	43 9'4	24		
32	48 9'3	47 42'1	47 13'9	46 45'0	46 15'2	45 44'6	45 13'2	44 41'1	44 8'1	43 34'6	43 0'2	42 25'3	28		
28	47 16'8	46 50'2	46 22'8	45 54'5	45 25'5	44 55'5	44 24'8	43 53'7	43 21'3	42 48'5	42 14'9	41 40'7	32		
24	46 24'0	45 58'0	45 31'3	45 3'8	44 35'3	44 6'1	43 36'1	43 5'5	42 34'0	42 2'0	41 29'0	40 55'7	36		
20	45 30'9	45 5'6	44 39'4	44 12'5	43 44'9	43 16'2	42 47'0	42 17'0	41 46'3	41 14'9	40 42'8	40 10'1	40		
16	44 37'6	44 12'8	43 47'3	43 21'0	42 54'0	42 26'2	41 57'4	41 28'3	40 58'1	40 27'6	39 56'1	39 24'1	44		
12	43 43'9	43 19'8	42 54'9	42 29'3	42 2'8	41 35'6	41 7'7	40 39'0	40 9'7	39 39'7	39 8'9	38 37'7	48		
8	42 50'1	42 26'5	42 2'2	41 37'2	41 11'4	40 44'7	40 17'4	39 49'6	39 20'8	38 51'5	38 21'4	37 50'9	52		
4	41 56'0	41 33'0	41 9'3	40 44'8	40 19'6	39 53'6	39 26'9	38 59'7	38 31'7	38 3'0	37 33'6	37 3'7	2 56		
21 0	41 1'7	40 39'2	40 16'1	39 52'3	39 27'6	38 53'9	38 2'3	38 36'1	38 9'5	37 42'1	37 14'1	36 45'3	3 0		

TRUE ALTITUDE OF BODY.

LATITUDE 7°.

Vesterly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as.</i>														Westerly Hour Angle.	
Declination																Declination	
me me.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
0	21 0	44 34.5	44 23.7	44 12.0	43 59.2	43 45.5	43 30.9	43 15.4	42 58.9	42 41.5	42 23.1	42 4.0	41 44.2	41 23.3	3 0	9 0	
4	20 56	43 35.4	43 24.8	43 13.2	43 0.8	42 47.3	42 33.0	42 17.8	42 1.7	41 44.7	41 26.7	41 8.0	40 48.7	40 28.3	4 56	8 56	
8	52	42 36.2	42 25.8	42 14.5	42 2.3	41 49.1	41 35.0	41 20.1	41 4.4	40 47.8	40 30.2	40 12.0	39 53.0	39 33.2	8 52		
12	48	41 37.0	41 26.8	41 15.6	41 3.7	40 50.7	40 36.9	40 22.4	40 7.0	39 50.8	39 33.6	39 15.7	38 57.2	38 37.8	12 48		
16	44	40 37.8	40 27.7	40 16.8	40 4.9	39 52.3	39 38.8	39 24.6	39 9.5	38 53.6	38 36.8	38 19.4	38 1.3	37 42.4	16 44		
20	40	39 38.6	39 28.7	39 17.9	39 6.3	38 53.9	38 40.7	38 26.7	38 12.0	37 56.4	37 40.0	37 22.9	37 5.2	36 46.7	20 40		
24	36	38 39.3	38 29.5	38 19.0	38 7.6	37 55.4	37 42.4	37 28.8	37 14.3	36 59.1	36 43.0	36 26.3	36 9.0	35 50.9	24 36		
28	32	37 40.0	37 30.3	37 20.0	37 8.9	36 56.8	36 44.1	36 30.7	36 16.6	36 1.6	35 45.9	35 29.6	35 12.7	34 55.0	28 32		
32	28	36 40.7	36 31.2	36 21.0	36 10.0	35 58.2	35 45.7	35 32.6	35 18.7	35 4.2	34 48.7	34 32.8	34 16.3	33 58.9	32 28		
36	24	35 41.4	35 32.0	35 22.0	35 11.2	34 59.6	34 47.4	34 34.5	34 20.9	34 6.6	33 51.6	33 35.9	33 19.7	33 2.8	36 24		
40	20	34 42.1	34 32.8	34 22.9	34 12.3	34 0.9	33 48.8	33 36.2	33 22.9	33 8.9	32 54.2	32 38.9	32 23.1	32 6.5	40 20		
44	16	33 42.7	33 33.6	33 23.8	33 13.3	33 2.1	32 50.4	32 38.0	32 25.0	32 11.2	31 56.7	31 41.8	31 26.3	31 10.1	44 16		
48	12	32 43.4	32 34.3	32 24.7	32 14.4	32 3.4	31 51.8	31 39.7	31 26.8	31 13.4	30 59.2	30 44.6	30 29.4	30 13.6	48 12		
52	8	31 44.0	31 35.1	31 25.5	31 15.4	31 4.6	30 53.2	30 41.3	30 28.7	30 15.5	30 1.7	29 47.3	29 32.6	29 17.0	52 8		
56	4	30 44.6	30 35.8	30 26.4	30 16.4	30 5.8	29 54.6	29 42.8	29 30.5	29 17.6	29 4.0	28 50.0	28 35.5	28 20.4	3 56	4	
0	20 0	29 45.2	29 36.5	29 27.2	29 17.4	29 6.8	28 55.8	28 44.3	28 32.2	28 19.6	28 6.3	27 52.6	27 38.4	27 23.5	4 0	8 0	
4	19 56	28 45.9	28 37.2	28 28.1	28 18.3	28 7.9	27 57.1	27 45.8	27 33.9	27 21.5	27 8.5	26 55.1	26 41.2	26 26.7	4 56		
8	52	27 46.4	27 37.9	27 28.8	27 19.2	27 9.0	26 58.4	26 47.2	26 35.6	26 23.4	26 10.7	25 57.5	25 43.9	25 29.8	8 52		
12	48	26 47.0	26 38.5	26 29.6	26 20.1	26 10.1	25 59.7	25 48.7	25 37.2	25 25.3	25 12.7	24 59.8	24 46.6	24 32.7	12 48		
16	44	25 47.5	25 39.2	25 30.3	25 21.0	25 11.0	25 0.8	24 50.0	24 38.8	24 27.0	24 14.7	24 2.2	23 49.2	23 35.7	16 44		
20	40	24 48.0	24 39.7	24 31.0	24 21.8	24 12.1	24 1.9	23 51.4	23 40.3	23 28.8	23 16.8	23 4.4	22 51.7	22 38.5	20 40		
24	36	23 48.5	23 40.4	23 31.7	23 22.7	23 13.0	23 3.0	22 52.6	22 41.8	22 30.5	22 18.7	22 6.6	21 54.2	21 41.2	24 36		
28	32	22 49.1	22 40.9	22 32.4	22 23.5	22 14.0	22 4.1	21 53.9	21 43.2	21 32.2	21 20.6	21 8.8	20 56.6	20 43.9	28 32		
32	28	21 49.7	21 41.6	21 33.1	21 24.2	21 14.8	21 5.2	20 55.1	20 44.7	20 33.8	20 22.5	20 10.8	19 59.0	19 46.5	32 28		
36	24	20 50.2	20 42.1	20 33.8	20 24.9	20 15.7	20 6.2	19 56.3	19 46.0	19 35.4	19 24.3	19 12.9	19 1.3	18 49.1	36 24		
40	20	19 50.7	19 42.7	19 34.4	19 25.7	19 16.6	19 7.2	18 57.5	18 47.4	18 36.9	18 26.0	18 14.8	18 3.6	17 51.6	40 20		
44	16	18 51.2	18 43.3	18 35.0	18 26.4	18 17.5	18 8.2	17 58.6	17 48.7	17 38.5	17 27.7	17 16.8	17 5.7	16 54.1	44 16		
48	12	17 51.7	17 43.8	17 35.7	17 27.2	17 18.3	17 9.2	16 59.7	16 50.0	16 39.9	16 29.5	16 18.7	16 7.9	15 56.5	48 12		
52	8	16 52.2	16 44.3	16 36.3	16 27.9	16 19.1	16 10.1	16 0.8	15 51.2	15 41.3	15 31.0	15 20.6	15 10.0	14 58.9	52 8		
56	4	15 52.6	15 44.9	15 36.9	15 28.6	15 19.9	15 11.0	15 1.9	14 52.5	14 42.7	14 32.7	14 22.4	14 12.1	14 1.2	4 56	4	
0	19 0	14 53.1	14 45.4	14 37.5	14 29.2	14 20.7	14 11.9	14 2.9	13 53.6	13 44.1	13 34.3	13 24.2	13 14.0	13 3.5	5 0	7 0	
4	18 56	13 53.6	13 45.9	13 38.0	13 29.9	13 21.4	13 12.8	13 3.9	12 54.8	12 45.5	12 35.8	12 26.0	12 16.0	12 5.7	4 56		
8	52	12 54.1	12 46.5	12 38.6	12 30.5	12 22.2	12 13.6	12 5.0	11 56.0	11 46.8	11 37.3	11 27.7	11 17.9	11 7.9	8 52		
12	48	11 54.6	11 47.0	11 39.2	11 31.2	11 22.9	11 14.5	11 5.9	10 57.1	10 48.1	10 38.8	10 29.3	10 19.8	10 10.0	12 48		
16	44	10 55.0	10 47.4	10 39.7	10 31.8	10 23.6	10 15.3	10 6.9	9 58.2	9 49.3	9 40.2	9 31.0	9 21.7	9 12.1	16 44		
20	40	9 55.5	9 47.9	9 40.3	9 32.5	9 24.4	9 16.1	9 7.8	8 59.3	8 50.6	8 41.6	8 32.6	8 23.5	8 14.1	20 40		
24	36	8 56.0	8 48.4	8 40.8	8 33.1	8 25.1	8 16.9	8 8.7	8 0.4	7 51.8	7 43.0	7 34.2	7 25.4	7 16.2	24 36		
28	32	7 56.5	7 48.9	7 41.4	7 33.7	7 25.7	7 17.7	7 9.6	7 1.4	6 53.0	6 44.3	6 35.7	6 27.1	6 18.2	28 32		
32	28	6 56.9	6 49.4	6 41.9	6 34.2	6 26.4	6 18.5	6 10.5	6 2.4	5 54.1	5 45.7	5 37.2	5 28.8	5 20.1	32 28		
36	24	5 57.4	5 49.9	5 42.4	5 34.8	5 27.0	5 19.2	5 11.4	5 3.4	4 55.3	4 47.0	4 38.7	4 30.5	4 22.0	36 24		
40	20	4 57.8	4 50.4	4 42.9	4 35.4	4 27.7	4 19.9	4 12.2	4 4.4	3 56.4	3 48.3	3 40.2	3 32.1	3 23.9	40 20		
44	16	3 58.2	3 50.8	3 43.4	3 35.9	3 28.3	3 20.7	3 13.0	3 5.3	2 57.5	2 49.6	2 41.6	2 33.8	2 25.8	44 16		
48	12	2 58.7	2 51.3	2 43.9	2 36.5	2 28.9	2 21.4	2 13.9	2 6.2	1 58.6	1 50.8	1 43.1	1 35.4	1 27.6	48 12		
52	8	1 59.1	1 51.7	1 44.4	1 37.1	1 29.6	1 22.1	1 14.6	1 7.1	0 59.6	0 52.0	0 44.5	0 37.0	0 29.4	52 8		
56	4	0 59.5	0 52.2	0 44.9	0 37.6	0 30.2	0 22.8	0 15.4	0 8.0	0 0.7	0 6.8	0 14.2	0 21.4	0 28.8	5 56	4	
0	18 0	0 0.0	0 7.3	0 14.6	0 21.9	0 29.2	0 36.5	0 43.8	0 51.1	0 58.3	1 5.6	1 12.7	1 20.0	1 27.1	6 0	6 0	

The heavy zigzag line is the horizon line and separates contrary names from same names.

LATITUDE 7°.															
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.	
		Declination												Declination	
Same Name.	Contrary Name	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.
15 0	21 0	41 1.7	40 39.2	40 16.1	39 52.2	39 27.6	39 2.2	38 36.1	38 9.5	37 42.1	37 14.1	36 45.5	36 16.2	3 0	9 0
4	20 56	40 7.2	39 45.3	39 22.7	38 59.3	38 35.3	38 10.5	37 45.0	37 19.0	36 52.2	36 24.9	35 56.9	35 28.3	4	8 56
8	52	39 12.5	38 51.1	38 29.0	38 6.3	37 42.8	37 18.5	36 53.7	36 28.3	36 2.1	35 35.4	35 8.0	34 40.1	8	52
12	48	38 17.7	37 56.9	37 35.2	37 12.9	36 50.0	36 26.4	36 2.1	35 37.3	35 11.7	34 45.6	34 18.8	33 51.5	12	48
16	44	37 22.6	37 2.3	36 41.1	36 19.4	35 57.0	35 33.9	35 10.2	34 46.0	34 21.1	33 55.5	33 29.3	33 2.7	16	44
20	40	36 27.6	36 7.7	35 46.9	35 25.7	35 3.8	34 41.3	34 18.1	33 54.5	33 30.1	33 5.2	32 39.5	32 13.6	20	40
24	36	35 32.1	35 12.6	34 52.5	34 31.8	34 10.4	33 48.4	33 25.8	33 2.7	32 38.9	32 14.5	31 49.6	31 24.2	24	36
28	32	34 36.6	34 17.6	33 58.0	33 37.7	33 16.9	32 55.3	32 33.2	32 10.7	31 47.4	31 23.7	30 59.3	30 34.6	28	32
32	28	33 41.0	33 22.4	33 3.2	32 43.5	32 23.1	32 2.1	31 40.5	31 18.4	30 55.8	30 32.6	30 8.8	29 44.6	32	28
36	24	32 45.3	32 27.0	32 8.3	31 49.0	31 29.2	31 8.6	30 47.6	30 26.1	30 3.9	29 41.3	29 18.1	28 54.5	36	24
40	20	31 49.4	31 31.6	31 13.3	30 54.4	30 35.0	30 15.0	29 54.4	29 33.5	29 11.8	28 49.8	28 27.1	28 4.0	40	20
44	16	30 53.4	30 36.0	30 18.1	29 59.7	29 40.7	29 21.2	29 1.1	28 40.7	28 19.5	27 58.0	27 35.9	27 13.4	44	16
48	12	29 57.3	29 40.3	29 22.8	29 4.8	28 46.3	28 27.2	28 7.7	27 47.7	27 27.1	27 6.1	26 44.5	26 22.6	48	12
52	8	29 1.1	28 44.4	28 27.3	28 9.8	27 51.7	27 33.1	27 14.0	26 54.6	26 34.5	26 14.0	25 53.0	25 31.6	52	8
15 56	4	28 4.7	27 48.5	27 31.8	27 14.7	26 57.1	26 38.9	26 20.3	26 1.2	25 41.7	25 21.8	25 1.3	24 40.4	3 56	4
16 0	20 0	27 8.3	26 52.4	26 36.2	26 19.5	26 2.3	25 44.5	25 26.3	25 7.8	24 48.7	24 29.2	24 9.3	23 49.0	4 0	8 0
4	19 56	26 11.8	25 56.3	25 40.4	25 24.1	25 7.3	24 50.0	24 32.2	24 14.2	23 55.6	23 36.6	23 17.2	22 57.4	4	7 56
8	52	25 15.2	25 0.0	24 44.6	24 28.6	24 12.2	23 55.3	23 38.0	23 20.4	23 2.3	22 43.9	22 24.9	22 5.6	8	52
12	48	24 18.5	24 3.7	23 48.5	23 33.0	23 17.0	23 0.6	22 43.7	22 26.6	22 8.9	21 50.9	21 32.4	21 13.6	12	48
16	44	23 21.8	23 7.3	22 52.5	22 37.3	22 21.7	22 5.6	21 49.3	21 32.6	21 15.4	20 57.9	20 39.8	20 21.6	16	44
20	40	22 24.9	22 10.8	21 56.3	21 41.5	21 26.3	21 10.7	20 54.7	20 38.5	20 21.7	20 4.6	19 47.1	19 29.4	20	40
24	36	21 27.9	21 14.2	21 0.1	20 45.6	20 30.9	20 15.6	20 0.0	19 44.2	19 27.9	19 11.3	18 54.2	18 37.0	24	36
28	32	20 30.9	20 17.5	20 3.7	19 49.7	19 35.3	19 20.4	19 5.2	18 49.8	18 33.9	18 17.8	18 1.2	17 44.5	28	32
32	28	19 33.9	19 20.7	19 7.3	18 53.6	18 39.6	18 25.1	18 10.3	17 55.3	17 39.9	17 24.2	17 8.1	16 51.8	32	28
36	24	18 36.7	18 23.9	18 10.9	17 57.5	17 43.8	17 29.7	17 15.3	17 0.7	16 45.7	16 30.5	16 14.9	15 59.1	36	24
40	20	17 39.6	17 27.1	17 14.3	17 1.3	16 47.9	16 34.2	16 20.2	16 6.0	15 51.5	15 36.7	15 21.5	15 6.2	40	20
44	16	16 42.3	16 30.1	16 17.6	16 4.9	15 52.0	15 38.6	15 25.0	15 11.3	14 57.1	14 42.6	14 28.0	14 13.1	44	16
48	12	15 45.0	15 33.1	15 20.9	15 8.6	14 55.9	14 43.0	14 29.8	14 16.4	14 2.7	13 48.7	13 34.4	13 20.0	48	12
52	8	14 47.6	14 36.0	14 24.2	14 12.1	13 59.9	13 47.2	13 34.4	13 21.4	13 8.1	12 54.6	12 40.7	12 26.8	52	8
16 56	4	13 50.2	13 38.9	13 27.4	13 15.6	13 3.7	12 51.4	12 39.0	12 26.4	12 13.4	12 0.4	11 47.0	11 33.5	4 56	4
17 0	19 0	12 52.7	12 41.7	12 30.5	12 19.1	12 7.4	11 55.6	11 43.5	11 31.2	11 18.7	11 6.1	10 53.1	10 40.1	5 0	7 0
4	18 56	11 55.3	11 44.4	11 33.6	11 22.4	11 11.2	10 59.6	10 47.9	10 36.0	10 23.9	10 11.7	9 59.1	9 46.6	4	6 56
8	52	10 57.7	10 47.2	10 36.5	10 25.8	10 14.8	10 3.6	9 52.2	9 40.8	9 29.1	9 17.2	9 5.1	8 52.9	8	52
12	48	10 0.0	9 49.8	9 39.4	9 29.0	9 18.4	9 7.5	8 56.5	8 45.4	8 34.1	8 22.7	8 11.0	7 59.2	12	48
16	44	9 2.4	8 52.4	8 42.4	8 32.2	8 21.9	8 11.4	8 0.7	7 50.0	7 39.1	7 28.0	7 16.7	7 5.4	16	44
20	40	8 4.7	7 55.0	7 45.2	7 35.3	7 25.4	7 15.2	7 4.9	6 54.5	6 44.0	6 33.3	6 22.4	6 11.6	20	40
24	36	7 6.9	6 57.5	6 48.0	6 38.5	6 28.8	6 19.0	6 9.0	5 59.0	5 48.8	5 38.6	5 28.1	5 17.7	24	36
28	32	6 9.2	6 0.0	5 50.8	5 41.6	5 32.2	5 22.6	5 13.0	5 3.4	4 53.7	4 43.7	4 33.7	4 23.7	28	32
32	28	5 11.4	5 2.5	4 53.5	4 44.6	4 35.5	4 26.2	4 17.0	4 7.7	3 58.3	3 48.9	3 39.2	3 29.6	32	28
36	24	4 13.5	4 4.9	3 56.2	3 47.5	3 38.8	3 29.8	3 20.9	3 12.0	3 3.0	2 53.9	2 44.7	2 35.5	36	24
40	20	3 15.6	3 7.2	2 58.9	2 50.5	2 41.9	2 33.4	2 24.8	2 16.2	2 7.5	1 58.9	1 50.0	1 41.3	40	20
44	16	2 17.7	2 9.6	2 1.4	1 53.3	1 45.1	1 36.9	1 28.6	1 20.2	1 12.1	1 3.8	0 55.4	0 47.0	44	16
48	12	1 19.8	1 11.9	1 4.0	0 56.1	0 48.3	0 40.3	0 32.4	0 24.5	0 16.6	0 8.7	0 0.6	0 7.3	48	12
52	8	0 21.8	0 14.1	0 6.5	0 1.1	0 8.6	0 16.2	0 23.8	0 31.4	0 39.0	0 46.5	0 54.1	1 1.6	52	8
17 56	4	0 36.2	0 43.7	0 51.0	0 58.3	1 5.6	1 12.9	1 20.1	1 27.3	1 34.6	1 41.7	1 48.9	1 56.0	5 56	4
18 0	18 0	1 34.3	1 41.4	1 48.4	1 55.5	2 2.5	2 9.5	2 16.5	2 23.3	2 30.2	2 37.0	2 43.8	2 50.4	6 0	6 0

TRUE ALTITUDE OF BODY.

LATITUDE 8°.																													
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.																								Westerly Hour Angle.			
		0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°				12°	
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	82	0	83	0	84	0	85	0	86	0	87	0	88	0	89	0	90	0	89	0	88	0	87	0	86	0	0	0
23	56	81	56	82	55	83	55	84	54	85	52	86	50	87	46	88	35	89	0	88	35	87	46	86	50	85	52	8	4
	52	81	45	82	43	83	40	84	37	85	32	86	24	87	10	87	46	88	1	87	46	87	11	86	24	85	32	8	8
	48	81	27	82	23	83	17	84	10	85	0	86	46	86	24	86	51	87	1	86	52	86	25	85	47	85	1	12	12
	44	81	3	81	56	82	47	83	36	84	21	85	1	85	33	85	54	86	2	85	55	85	34	85	2	84	23	16	16
	40	80	34	81	24	82	12	82	56	83	37	84	11	84	38	84	56	85	2	84	57	84	40	84	13	83	39	20	20
	36	80	0	80	47	81	31	82	12	82	49	83	19	83	43	83	58	84	3	83	59	83	44	83	22	82	51	24	24
	32	79	23	80	7	80	48	81	25	81	58	82	25	82	46	82	59	83	4	83	0	82	48	82	28	82	1	28	28
	28	78	42	79	23	80	1	80	36	81	5	81	30	81	48	82	0	82	4	82	1	81	50	81	33	81	10	32	32
	24	77	58	78	37	79	13	79	44	80	11	80	34	81	1	80	50	81	1	81	5	81	2	80	53	80	37	36	36
	20	77	13	77	49	78	22	78	51	79	17	79	37	79	52	80	2	80	5	80	3	79	55	79	41	79	22	40	40
	16	76	25	76	59	77	30	77	57	78	21	78	40	78	54	79	3	79	6	79	4	78	57	78	44	78	27	44	44
	12	75	36	76	8	76	37	77	3	77	25	77	42	77	55	78	3	78	7	78	5	77	58	77	47	77	31	48	48
	8	74	46	75	16	75	44	76	7	76	28	76	44	76	56	77	4	77	7	77	6	77	0	76	50	76	35	52	52
	4	73	54	74	23	74	49	75	11	75	30	75	46	75	57	76	5	76	8	76	7	76	1	75	52	75	38	0	56
23	0	73	2	73	30	73	54	74	15	74	33	74	48	74	58	75	5	75	8	75	7	75	3	74	54	74	42	1	0
22	56	72	9	72	35	72	58	73	18	73	35	73	49	73	59	74	6	74	9	74	8	74	4	73	56	73	44	4	4
	52	71	15	71	40	72	2	72	21	72	37	72	50	73	0	73	7	73	1	73	10	73	9	73	5	72	58	8	8
	48	70	21	70	45	71	6	71	24	71	39	71	52	72	1	72	7	72	10	72	10	72	6	71	59	71	50	12	12
	44	69	26	69	49	70	9	70	26	70	41	70	53	71	2	71	8	71	11	71	11	71	8	71	1	70	52	16	16
	40	68	31	68	52	69	12	69	28	69	43	69	54	70	3	70	8	70	11	70	11	70	9	70	3	69	54	20	20
	36	67	35	67	56	68	14	68	30	68	44	68	55	69	3	69	9	69	12	69	12	69	10	69	4	68	56	24	24
	32	66	39	66	59	67	17	67	32	67	45	67	56	68	4	68	10	68	13	68	13	68	11	68	6	67	58	28	28
	28	65	43	66	2	66	19	66	34	66	47	66	57	67	5	67	10	67	13	67	14	67	12	67	7	66	0	32	32
	24	64	46	65	5	65	21	65	36	65	48	65	58	66	6	66	11	66	14	66	14	66	13	66	8	66	2	36	36
	20	63	49	64	7	64	23	64	37	64	49	64	59	65	6	65	11	65	14	65	15	65	14	65	10	65	4	40	40
	16	62	52	63	10	63	25	63	39	63	50	64	0	64	7	64	12	64	15	64	16	64	15	64	11	64	5	44	44
	12	61	55	62	12	62	27	62	40	62	51	63	0	63	7	63	13	63	16	63	17	63	15	63	12	63	7	48	48
	8	60	58	61	14	61	29	61	41	61	52	62	1	62	8	62	13	62	16	62	17	62	16	62	13	62	9	52	52
	4	60	0	60	16	60	30	60	42	60	53	61	2	61	9	61	14	61	17	61	18	61	17	61	15	61	10	1	56
22	0	59	2	59	18	59	32	59	44	59	54	60	3	60	9	60	14	60	17	60	19	60	18	60	16	60	12	2	0
21	56	58	5	58	20	58	33	58	45	58	55	59	3	59	10	59	15	59	18	59	19	59	19	59	17	59	13	4	4
	52	57	7	57	21	57	34	57	46	57	56	58	4	58	11	58	16	58	19	58	20	58	20	58	18	58	15	8	8
	48	56	9	56	23	56	36	56	47	56	57	59	5	59	11	59	16	59	19	59	21	59	21	59	19	59	16	12	12
	44	55	10	55	24	55	37	55	48	55	57	59	5	59	12	59	17	59	20	59	22	59	22	59	21	59	18	16	16
	40	54	12	54	26	54	38	54	49	54	58	59	6	59	12	59	17	59	21	59	22	59	23	59	22	59	19	20	20
	36	53	14	53	27	53	39	53	50	53	59	60	7	60	13	60	18	60	21	60	23	60	24	60	23	60	20	24	24
	32	52	16	52	29	52	40	52	51	53	0	53	7	53	14	53	19	53	22	53	24	53	25	53	24	53	22	28	28
	28	51	17	51	30	51	41	51	51	52	0	52	8	52	14	52	19	52	22	52	23	52	26	52	25	52	23	32	32
	24	50	19	50	31	50	42	50	52	51	1	51	9	51	15	51	20	51	23	51	26	51	27	51	26	51	25	36	36
	20	49	20	49	32	49	43	49	53	50	2	50	9	50	15	50	20	50	24	50	26	50	27	50	27	50	26	40	40
	16	48	21	48	33	48	44	48	54	49	2	49	10	49	16	49	21	49	25	49	27	49	28	49	28	49	27	44	44
	12	47	23	47	34	47	45	47	55	48	3	48	10	48	17	48	21	48	25	48	28	48	29	48	30	48	29	48	48
	8	46	24	46	35	46	46	46	55	47	4	47	11	47	17	47	22	47	26	47	29	47	30	47	31	47	30	52	52
	4	45	25	45	36	45	47	45	56	46	4	46	12	46	18	46	23	46	27	46	29	46	31	46	32	46	31	2	56
21	0	44	26	44	37	44	48	44	57	45	5	45	12	45	18	45	23	45	27	45	30	45	32	45	33	45	33	3	0

		LATITUDE 8°.													
Westerly		DECLINATION — same Name as — LATITUDE.												Westerly	
Hour														Hour	
Angle.		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Angle.	
h. m.		° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	
24 0		85 0 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	0 0	
23 56		84 54.2	83 55.3	82 55.9	81 56.4	80 56.8	79 57.3	78 57.5	77 57.7	76 57.8	75 58.0	74 58.3	73 58.3	4	
52		84 37.6	83 41.3	82 43.9	81 45.8	80 47.4	79 48.7	78 49.7	77 50.7	76 51.6	75 52.3	74 52.8	73 53.0	8	
48		84 11.7	83 19.0	82 24.5	81 28.7	80 32.1	79 35.0	78 37.4	77 39.2	76 41.1	75 42.3	74 43.5	73 44.5	12	
44		83 38.3	82 49.7	81 58.6	81 5.6	80 11.3	79 16.3	78 20.2	77 23.4	76 26.6	75 28.9	74 31.1	73 32.8	16	
40		82 59.2	82 14.8	81 27.3	80 37.4	79 45.8	78 52.9	77 58.7	77 3.7	76 8.2	75 11.8	74 15.1	73 18.0	20	
36		82 16.0	81 35.5	80 51.5	80 4.7	79 15.9	78 25.3	77 33.4	76 39.9	75 46.4	74 51.3	73 56.1	72 59.9	24	
32		81 29.6	80 52.7	80 12.0	79 28.2	78 42.3	77 54.1	77 4.1	76 13.1	75 21.0	74 28.0	73 34.0	72 39.2	28	
28		80 40.7	80 7.0	79 29.7	78 48.8	78 5.5	77 19.8	76 32.2	75 43.1	74 52.7	74 1.4	73 9.2	72 15.7	32	
24		79 50.3	79 19.2	78 44.5	78 6.7	77 25.8	76 42.6	75 57.1	75 10.2	74 21.8	73 32.3	72 41.5	71 49.8	36	
20		78 58.4	78 29.9	77 57.7	77 22.3	76 43.8	76 3.1	75 19.9	74 34.8	73 48.7	73 0.5	72 11.7	71 21.3	40	
16		78 5.3	77 39.2	77 9.1	76 36.0	75 59.8	75 21.3	74 40.3	73 57.4	73 13.0	72 26.8	71 39.4	70 50.8	44	
12		77 11.4	76 47.2	76 19.3	75 48.3	75 14.4	74 37.7	73 58.9	73 17.9	72 35.4	71 51.0	71 5.3	70 18.2	48	
8		76 16.8	75 54.2	75 28.4	74 59.3	74 27.3	73 52.8	73 15.7	72 36.6	71 56.0	71 13.3	70 29.4	69 43.8	52	
4		75 21.6	75 0.6	74 36.5	74 9.2	73 39.1	73 6.3	72 31.2	71 53.8	71 14.9	70 34.1	69 51.7	69 7.7	0 56	
23 0		74 26.0	74 6.5	73 43.8	73 18.1	72 49.6	72 18.8	71 45.3	71 9.7	70 32.6	69 53.2	69 12.5	68 30.1	1 0	
22 56		73 29.9	73 11.7	72 50.5	72 26.3	71 59.5	71 29.9	70 58.3	70 24.4	69 48.8	69 11.1	68 31.9	67 51.1	4	
52		72 33.5	72 16.6	71 56.5	71 33.8	71 8.5	70 40.5	70 10.4	69 38.0	69 3.9	68 27.8	67 50.1	67 10.7	8	
48		71 36.9	71 21.0	71 2.2	70 40.6	70 16.7	69 50.4	69 21.5	68 50.7	68 18.1	67 43.4	67 7.2	66 29.3	12	
44		70 40.0	70 25.2	70 7.4	69 47.1	69 24.4	68 59.2	68 31.9	68 2.4	67 31.2	66 58.0	66 23.3	65 46.7	16	
40		69 43.0	69 29.0	69 12.2	68 53.1	68 31.5	68 7.6	67 41.6	67 13.4	66 43.6	66 11.8	65 38.4	65 3.2	20	
36		68 45.9	68 32.6	68 16.9	67 58.5	67 38.2	67 15.5	66 50.6	66 23.7	65 55.3	65 24.7	64 52.6	64 18.7	24	
32		67 48.4	67 36.1	67 21.0	67 3.8	66 44.5	66 22.8	65 59.2	65 33.5	65 6.2	64 36.9	64 6.0	63 33.4	28	
28		66 51.0	66 39.3	66 25.2	66 8.8	65 50.3	65 29.8	65 7.3	64 42.7	64 16.5	63 48.4	63 18.8	62 47.4	32	
24		65 53.4	65 42.3	65 29.0	65 13.5	64 56.0	64 36.4	64 14.9	63 51.4	63 26.3	62 59.4	62 30.9	62 0.8	36	
20		64 55.6	64 45.3	64 32.6	64 17.9	64 1.4	63 42.6	63 22.0	62 59.6	62 35.7	62 9.8	61 42.4	61 13.4	40	
16		63 57.9	63 48.0	63 36.1	63 22.2	63 6.4	62 48.6	62 28.9	62 7.4	61 44.5	61 19.7	60 53.4	60 25.4	44	
12		63 0.6	62 50.8	62 39.5	62 26.3	62 11.2	61 54.2	61 35.5	61 14.9	60 52.9	60 29.1	60 3.9	59 37.0	48	
8		62 2.1	61 53.4	61 42.7	61 30.1	61 15.8	60 59.7	60 41.7	60 22.1	60 1.0	59 38.1	59 13.9	58 48.0	52	
4		61 4.2	60 56.0	60 45.8	60 33.9	60 20.2	60 4.8	59 47.7	59 28.9	59 8.8	58 46.8	58 23.5	57 58.6	1 56	
22 0		60 6.1	59 58.4	59 48.8	59 37.5	59 24.5	59 9.8	58 53.5	58 35.5	58 16.2	57 55.1	57 32.7	57 8.7	2 0	
21 56		59 8.0	59 0.7	58 51.7	58 41.0	58 28.6	58 14.7	57 59.0	57 41.8	57 23.3	57 3.1	56 41.6	56 18.5	4	
52		58 9.8	58 3.0	57 54.5	57 44.3	57 32.6	57 19.3	57 4.4	56 47.8	56 30.2	56 10.8	55 50.1	55 28.0	8	
48		57 11.7	57 5.2	56 57.2	56 47.5	56 36.5	56 23.8	56 9.5	55 53.8	55 36.7	55 18.2	54 58.3	54 37.0	12	
44		56 13.4	56 7.5	55 59.8	55 50.7	55 40.1	55 28.1	55 14.5	54 59.4	54 43.2	54 25.3	54 6.3	53 45.8	16	
40		55 15.2	55 9.6	55 2.4	54 53.8	54 43.7	54 32.2	54 19.3	54 4.9	53 49.3	53 32.3	53 14.0	52 54.4	20	
36		54 16.9	54 11.7	54 4.9	53 56.8	53 47.2	53 36.3	53 24.0	53 10.2	52 55.4	52 39.0	52 21.5	52 2.6	24	
32		53 18.7	53 13.7	53 7.4	52 59.7	52 50.7	52 40.3	52 28.5	52 15.3	52 1.2	51 45.6	51 28.8	51 10.6	28	
28		52 20.3	52 15.8	52 9.8	52 2.5	51 54.0	51 44.1	51 32.9	51 20.4	51 6.9	50 52.0	50 35.8	50 18.5	32	
24		51 22.0	51 17.8	51 12.2	51 5.4	50 57.2	50 47.8	50 37.3	50 25.3	50 12.4	49 58.0	49 42.7	49 26.0	36	
20		50 23.6	50 19.6	50 14.6	50 8.1	50 0.4	49 51.5	49 41.4	49 30.2	49 17.8	49 4.1	48 49.3	48 33.4	40	
16		49 25.2	49 21.7	49 16.8	49 10.8	49 3.6	48 55.2	48 45.6	48 34.7	48 23.1	48 10.0	47 55.9	47 40.6	44	
12		48 26.9	48 23.5	48 19.0	48 13.4	48 6.7	47 58.8	47 49.6	47 39.4	47 28.2	47 15.7	47 2.3	46 47.6	48	
8		47 28.4	47 25.4	47 21.3	47 16.1	47 9.7	47 2.3	46 53.7	46 43.8	46 33.2	46 21.3	46 8.5	45 54.5	52	
4		46 30.0	46 27.3	46 23.5	46 18.6	46 12.7	46 5.7	45 57.5	45 48.3	45 38.2	45 26.9	45 14.5	45 1.2	2 56	
21 0		45 31.6	45 29.2	45 25.7	45 21.2	45 15.7	45 9.0	45 1.3	44 52.6	44 43.0	44 32.2	44 20.6	44 7.8	3 0	

LATITUDE 8°.															
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°		
h. m.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	h. m.
21 0	44 26.7	44 37.9	44 48.1	44 57.2	45 5.4	45 12.6	45 18.7	45 23.8	45 27.6	45 30.7	45 32.5	45 33.2	45 33.0	3 0	
20 56	43 27.9	43 38.9	43 48.9	43 58.0	44 6.1	44 13.2	44 19.3	44 24.4	44 28.3	44 31.4	44 33.4	44 34.3	44 34.4	4	
52	42 28.9	42 39.8	42 49.7	42 58.6	43 6.7	43 13.8	43 19.9	43 25.0	43 29.0	43 32.2	43 34.3	43 35.5	43 35.6	8	
48	41 30.0	41 40.7	41 50.5	41 59.3	42 7.3	42 14.4	42 20.5	42 25.6	42 29.7	42 32.9	42 35.3	42 36.5	42 37.0	12	
44	40 31.0	40 41.6	40 51.3	41 0.0	41 7.9	41 14.9	41 21.1	41 26.2	41 30.4	41 33.8	41 36.2	41 37.7	41 38.2	16	
40	39 32.0	39 42.5	39 52.0	40 0.6	40 8.5	40 15.5	40 21.6	40 26.8	40 31.1	40 34.6	40 37.2	40 38.7	40 39.6	20	
36	38 33.0	38 43.3	38 52.7	39 1.3	39 9.1	39 16.1	39 22.2	39 27.5	39 31.8	39 35.5	39 38.1	39 39.9	39 40.8	24	
32	37 34.0	37 44.1	37 53.5	38 2.0	38 9.7	38 16.6	38 22.8	38 28.1	38 32.6	38 36.2	38 39.1	38 41.0	38 42.2	28	
28	36 34.9	36 44.9	36 54.2	37 2.6	37 10.3	37 17.3	37 23.4	37 28.8	37 33.3	37 37.1	37 40.0	37 42.1	37 43.5	32	
24	35 35.8	35 45.7	35 54.8	36 3.2	36 10.9	36 17.9	36 24.0	36 29.4	36 34.1	36 37.9	36 41.0	36 43.3	36 44.9	36	
20	34 36.6	34 46.4	34 55.5	35 3.8	35 11.5	35 18.5	35 24.6	35 30.2	35 34.7	35 38.7	35 42.0	35 44.4	35 46.1	40	
16	33 37.5	33 47.1	33 56.2	34 4.4	34 12.1	34 19.0	34 25.3	34 30.8	34 35.5	34 39.6	34 43.0	34 45.5	34 47.5	44	
12	32 38.4	32 47.9	32 56.8	33 5.0	33 12.6	33 19.7	33 25.9	33 31.5	33 36.2	33 40.4	33 43.9	33 46.7	33 48.8	48	
8	31 39.1	31 48.6	31 57.5	32 5.6	32 13.3	32 20.2	32 26.5	32 32.1	32 37.0	32 41.3	32 44.9	32 47.8	32 50.2	52	
4	30 39.9	30 49.3	30 58.1	31 6.3	31 13.8	31 20.8	31 27.1	31 32.8	31 37.8	31 42.2	31 46.0	31 49.0	31 51.5	3 56	
20 0	29 40.7	29 50.0	29 58.8	30 6.8	30 14.4	30 21.4	30 27.7	30 33.5	30 38.6	30 43.1	30 47.0	30 50.2	30 52.8	4 0	
19 56	28 41.5	28 50.8	28 59.4	29 7.4	29 15.0	29 22.0	29 28.4	29 34.2	29 39.3	29 44.0	29 48.0	29 51.4	29 54.2	4	
52	27 42.2	27 51.4	28 0.0	28 8.0	28 15.6	28 22.5	28 29.0	28 34.9	28 40.1	28 44.9	28 49.0	28 52.5	28 55.6	8	
48	26 43.0	26 52.1	27 0.6	27 8.6	27 16.1	27 23.2	27 29.6	27 35.6	27 40.9	27 45.7	27 50.0	27 53.7	27 57.0	12	
44	25 43.6	25 52.7	26 1.3	26 9.2	26 16.8	26 23.8	26 30.3	26 36.3	26 41.7	26 46.7	26 51.2	26 54.9	26 58.3	16	
40	24 44.4	24 53.4	25 1.8	25 9.8	25 17.3	25 24.4	25 30.9	25 37.0	25 42.5	25 47.5	25 52.2	25 56.1	25 59.7	20	
36	23 45.1	23 54.0	24 2.5	24 10.4	24 18.0	24 25.0	24 31.6	24 37.7	24 43.3	24 48.5	24 53.2	24 57.4	24 61.1	24	
32	22 45.8	22 54.7	23 3.1	23 11.0	23 18.5	23 25.7	23 32.3	23 38.5	23 44.1	23 49.5	23 54.3	23 58.6	24 2.5	28	
28	21 46.5	21 55.3	22 3.7	22 11.6	22 19.1	22 26.2	22 33.0	22 39.2	22 45.0	22 50.4	22 55.4	22 59.8	23 3.9	32	
24	20 47.2	20 55.9	21 4.2	21 12.1	21 19.7	21 26.9	21 33.6	21 40.0	21 45.8	21 51.4	21 56.5	21 61.2	21 65.4	36	
20	19 47.9	19 56.5	20 4.8	20 12.7	20 20.3	20 27.5	20 34.3	20 40.7	20 46.8	20 52.3	20 57.6	21 2.4	21 6.9	40	
16	18 48.5	18 57.1	19 5.4	19 13.3	19 20.9	19 28.2	19 35.0	19 41.5	19 47.5	19 53.3	19 58.7	20 3.7	20 8.3	44	
12	17 49.1	17 57.7	18 6.0	18 13.9	18 21.5	18 28.8	18 35.7	18 42.3	18 48.4	18 54.3	18 59.9	19 5.0	19 9.8	48	
8	16 49.8	16 58.3	17 6.6	17 14.5	17 22.1	17 29.5	17 36.4	17 43.1	17 49.3	17 55.4	18 1.0	18 6.3	18 11.3	52	
4	15 50.4	15 58.9	16 7.2	16 15.1	16 22.8	16 30.1	16 37.1	16 43.9	16 50.3	16 56.4	17 2.2	17 7.6	17 12.8	4 56	
19 0	14 51.0	14 59.5	15 7.8	15 15.7	15 23.3	15 30.8	15 37.9	15 44.7	15 51.1	15 57.4	16 3.4	16 9.0	16 14.3	5 0	
18 56	13 51.6	14 0.1	14 8.4	14 16.2	14 23.9	14 31.4	14 38.6	14 45.5	14 52.1	14 58.5	15 4.6	15 10.3	15 15.9	4	
52	12 52.3	13 0.7	13 8.9	13 16.8	13 24.6	13 32.1	13 39.4	13 46.4	13 53.1	13 59.5	14 5.7	14 11.7	14 17.4	8	
48	11 52.9	12 1.3	12 9.5	12 17.4	12 25.2	12 32.8	12 40.1	12 47.2	12 54.0	13 0.6	13 7.0	13 13.1	13 19.0	12	
44	10 53.5	11 1.9	11 10.1	11 18.0	11 25.9	11 33.5	11 40.9	11 48.0	11 54.9	12 1.7	12 8.2	12 14.5	12 20.6	16	
40	9 54.1	10 2.5	10 10.7	10 18.7	10 26.5	10 34.2	10 41.6	10 48.9	10 55.9	11 2.8	11 9.5	11 15.9	11 22.2	20	
36	8 54.7	9 3.0	9 11.3	9 19.3	9 27.2	9 34.9	9 42.4	9 49.8	9 56.9	10 3.9	10 10.8	10 17.4	10 23.8	24	
32	7 55.3	8 3.6	8 11.9	8 19.9	8 27.8	8 35.6	8 43.2	8 50.7	8 57.9	9 5.1	9 12.0	9 18.8	9 25.5	28	
28	6 55.9	7 4.3	7 12.5	7 20.5	7 28.5	7 36.4	7 44.0	7 51.6	7 58.9	8 6.2	8 13.4	8 20.3	8 27.1	32	
24	5 56.5	6 4.8	6 13.1	6 21.1	6 29.1	6 37.0	6 44.9	6 52.5	7 0.0	7 7.4	7 14.7	7 21.8	7 28.8	36	
20	4 57.0	5 5.4	5 13.6	5 21.8	5 29.8	5 37.8	5 45.7	5 53.5	6 1.0	6 8.6	6 16.0	6 23.3	6 30.5	40	
16	3 57.7	4 6.0	4 14.3	4 22.4	4 30.5	4 38.6	4 46.5	4 54.4	5 2.1	5 9.8	5 17.4	5 24.9	5 32.3	44	
12	2 58.2	3 6.6	3 14.9	3 23.0	3 31.2	3 39.3	3 47.4	3 55.3	4 3.1	4 11.0	4 18.8	4 26.4	4 34.1	48	
8	1 58.8	2 7.2	2 15.5	2 23.7	2 31.9	2 40.1	2 48.2	2 56.3	3 4.2	3 12.3	3 20.2	3 28.0	3 35.9	52	
4	0 59.4	1 7.8	1 16.1	1 24.3	1 32.7	1 40.9	1 49.1	1 57.3	2 5.4	2 13.5	2 21.6	2 29.7	2 37.7	5 56	
18 0	0 0.0	0 8.4	0 16.7	0 25.0	0 33.3	0 41.7	0 50.0	0 58.3	1 6.6	1 14.9	1 23.1	1 31.3	1 39.5	6 0	

LATITUDE 8°.

Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
21 0	45 31.6	45 29.2	45 25.7	45 21.2	45 15.7	45 9.0	45 1.3	44 52.6	44 43.0	44 32.2	44 20.6	44 7.8	3 0		
20 56	44 33.1	44 31.1	44 27.9	44 23.7	44 18.6	44 12.3	44 5.1	43 56.9	43 47.8	43 37.6	43 26.4	43 14.3	4 4		
52	43 34.7	43 33.0	43 30.1	43 26.2	43 21.4	43 15.6	43 8.8	43 1.0	42 52.5	42 42.8	42 32.2	42 20.6	8		
48	42 36.2	42 34.8	42 32.1	42 28.7	42 24.3	42 18.9	42 12.5	42 5.2	41 57.1	41 47.9	41 37.9	41 26.7	12		
44	41 37.9	41 36.5	41 34.3	41 31.1	41 27.1	41 22.1	41 16.1	41 9.3	41 1.6	40 52.9	40 43.4	40 33.0	16		
40	40 39.3	40 38.3	40 36.3	40 33.5	40 29.8	40 25.2	40 19.7	40 13.3	40 6.1	39 57.8	39 48.9	39 39.0	20		
36	39 40.8	39 40.1	39 38.5	39 35.9	39 32.6	39 28.4	39 23.2	39 17.2	39 10.5	39 2.8	38 54.3	38 45.0	24		
32	38 42.4	38 41.9	38 40.5	38 38.3	38 35.3	38 31.5	38 26.7	38 21.1	38 14.9	38 7.6	37 59.7	37 50.8	28		
28	37 43.9	37 43.7	37 42.6	37 40.7	37 38.1	37 34.5	37 30.2	37 25.0	37 19.2	37 12.5	37 5.0	36 56.7	32		
24	36 45.5	36 45.5	36 44.6	36 43.1	36 40.7	36 37.6	36 33.6	36 28.8	36 23.5	36 17.2	36 10.2	36 2.4	36		
20	35 47.0	35 47.3	35 46.7	35 45.4	35 43.3	35 40.6	35 37.0	35 32.6	35 27.7	35 21.9	35 15.4	35 8.0	40		
16	34 48.6	34 49.1	34 48.7	34 47.7	34 46.0	34 43.6	34 40.4	34 36.4	34 31.9	34 26.6	34 20.5	34 13.6	44		
12	33 50.1	33 50.8	33 50.8	33 50.1	33 48.6	33 46.3	33 43.7	33 40.2	33 36.1	33 31.1	33 25.5	33 19.2	48		
8	32 51.6	32 52.6	32 52.8	32 52.4	32 51.3	32 49.5	32 47.1	32 43.9	32 40.2	32 35.7	32 30.5	32 24.7	52		
4	31 53.2	31 54.4	31 54.9	31 54.7	31 54.0	31 52.5	31 50.4	31 47.6	31 44.3	31 40.2	31 35.6	31 30.1	3 56		
20 0	30 54.8	30 56.2	30 56.9	30 57.0	30 56.6	30 55.5	30 53.7	30 51.2	30 48.4	30 44.7	30 40.5	30 35.6	4 0		
19 56	29 56.3	29 58.0	29 59.0	29 59.4	29 59.2	29 58.4	29 57.0	29 54.9	29 52.4	29 49.2	29 45.4	29 40.9	4 4		
52	28 57.9	28 59.8	29 1.0	29 1.8	29 1.8	29 1.3	29 0.3	28 58.6	28 56.5	28 53.7	28 50.3	28 46.3	8		
48	27 59.5	28 1.4	28 3.1	28 4.0	28 4.4	28 3.6	28 3.2	28 2.3	28 0.5	27 58.1	27 55.1	27 51.5	12		
44	27 1.1	27 3.4	27 5.1	27 6.3	27 7.1	27 7.3	27 6.8	27 5.9	27 4.6	27 2.5	27 0.0	26 56.8	16		
40	26 2.7	26 5.2	26 7.2	26 8.7	26 9.7	26 10.2	26 10.1	26 9.5	26 8.5	26 6.9	26 4.8	26 2.1	20		
36	25 4.3	25 7.0	25 9.3	25 11.0	25 12.3	25 13.1	25 13.4	25 13.1	25 12.5	25 11.3	25 9.6	25 7.4	24		
32	24 5.8	24 8.9	24 11.4	24 13.4	24 15.0	24 16.1	24 16.7	24 16.7	24 16.5	24 15.6	24 14.4	24 12.6	28		
28	23 7.5	23 10.7	23 13.5	23 15.8	23 17.6	23 19.0	23 19.9	23 20.4	23 20.5	23 20.0	23 19.2	23 17.8	32		
24	22 9.1	22 12.6	22 15.6	22 18.1	22 20.3	22 22.0	22 23.2	22 24.0	22 24.5	22 24.4	22 23.9	22 23.0	36		
20	21 10.8	21 14.5	21 17.7	21 20.5	21 22.9	21 24.9	21 26.5	21 27.6	21 28.5	21 28.8	21 28.7	21 28.2	40		
16	20 12.5	20 16.3	20 19.8	20 22.9	20 25.6	20 27.9	20 29.8	20 31.3	20 32.5	20 33.2	20 33.5	20 33.3	44		
12	19 14.2	19 18.3	19 21.9	19 25.2	19 28.3	19 30.8	19 33.1	19 34.9	19 36.5	19 37.6	19 38.3	19 38.5	48		
8	18 15.9	18 20.1	18 24.1	18 27.6	18 30.9	18 33.9	18 36.4	18 38.5	18 40.5	18 41.9	18 43.0	18 43.8	52		
4	17 17.5	17 22.1	17 26.2	17 30.1	17 33.6	17 36.8	17 39.7	17 42.2	17 44.4	17 46.3	17 47.8	17 49.0	4 56		
19 0	16 19.3	16 24.0	16 28.4	16 32.5	16 36.4	16 39.9	16 43.0	16 45.8	16 48.5	16 50.7	16 52.6	16 54.2	5 0		
18 56	15 21.0	15 26.0	15 30.6	15 35.0	15 39.1	15 42.9	15 46.3	15 49.5	15 52.5	15 55.1	15 57.4	15 59.4	4		
52	14 22.8	14 27.9	14 32.9	14 37.5	14 41.9	14 45.9	14 49.7	14 53.2	14 56.6	14 59.5	15 2.2	15 4.6	8		
48	13 24.5	13 29.9	13 35.1	13 40.0	13 44.6	13 49.0	13 53.1	13 56.9	14 0.6	14 4.0	14 7.1	14 9.8	12		
44	12 26.3	12 32.0	12 37.3	12 42.4	12 47.4	12 52.1	12 56.5	13 0.7	13 4.8	13 8.4	13 11.9	13 15.1	16		
40	11 28.1	11 34.0	11 39.6	11 45.0	11 50.2	11 55.3	12 0.0	12 4.5	12 8.9	12 12.9	12 16.7	12 20.3	20		
36	10 30.0	10 36.0	10 41.9	10 47.6	10 53.1	10 58.3	11 3.5	11 8.2	11 13.0	11 17.4	11 21.7	11 25.6	24		
32	9 31.8	9 38.1	9 44.2	9 50.2	9 56.0	10 1.6	10 6.9	10 12.1	10 17.1	10 21.9	10 26.6	10 31.0	28		
28	8 33.7	8 40.2	8 46.6	8 52.8	8 58.9	9 4.7	9 10.4	9 15.9	9 21.4	9 26.5	9 31.6	9 36.3	32		
24	7 35.6	7 42.4	7 49.0	7 55.4	8 1.8	8 7.9	8 13.9	8 19.8	8 25.5	8 31.1	8 36.5	8 41.7	36		
20	6 37.5	6 44.6	6 51.4	6 58.1	7 4.7	7 11.2	7 17.5	7 23.6	7 29.8	7 35.7	7 41.5	7 47.0	40		
16	5 39.5	5 46.7	5 53.8	6 0.8	6 7.7	6 14.5	6 21.1	6 27.6	6 34.1	6 40.3	6 46.5	6 52.5	44		
12	4 41.5	4 48.9	4 56.2	5 3.5	5 10.7	5 17.8	5 24.7	5 31.5	5 38.4	5 45.0	5 51.6	5 58.0	48		
8	3 43.5	3 51.1	3 58.7	4 6.2	4 13.7	4 21.1	4 28.4	4 35.6	4 42.7	4 49.7	4 56.7	5 3.5	52		
4	2 45.5	2 53.5	3 1.3	3 9.0	3 16.8	3 24.5	3 32.1	3 39.6	3 47.1	3 54.5	4 1.9	4 9.1	5 56		
18 0	1 47.6	1 55.8	2 3.8	2 11.9	2 19.9	2 27.9	2 35.8	2 43.7	2 51.5	2 59.3	3 7.1	3 14.7	6 0		

LATITUDE 8°.														
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.
24 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	73 0 0	72 0 0	71 0 0	70 0 0	0 0
23 56	81 56.3	80 56.7	79 57.0	78 57.3	77 57.5	76 57.7	75 57.9	74 58.0	73 58.1	72 58.2	71 58.3	70 58.5	69 58.5	4
52	81 45.3	80 46.9	79 48.2	78 49.2	77 50.1	76 50.9	75 51.5	74 52.1	73 52.6	72 52.9	71 53.5	70 53.8	69 54.2	8
48	81 27.5	80 30.9	79 33.7	78 36.0	77 38.0	76 39.6	75 41.0	74 42.3	73 43.4	72 44.2	71 45.3	70 46.1	69 46.9	12
44	81 3.7	80 9.4	79 14.0	78 17.9	77 21.2	76 24.1	75 26.6	74 28.7	73 30.6	72 32.3	71 34.0	70 35.3	69 36.7	16
40	80 34.5	79 42.7	78 49.5	77 55.3	77 0.3	76 4.6	75 8.3	74 11.6	73 14.5	72 17.1	71 19.6	70 21.6	69 23.5	20
36	80 0.7	79 11.5	78 20.8	77 28.6	76 35.3	75 41.4	74 46.6	73 51.3	72 55.0	71 58.8	71 2.2	70 5.0	69 7.8	24
32	79 23.1	78 36.7	77 48.4	76 58.2	76 7.1	75 14.5	74 21.5	73 27.6	72 32.7	71 37.4	70 42.0	69 45.8	68 49.5	28
28	78 42.3	77 58.4	77 12.5	76 24.6	75 35.3	74 44.9	73 53.3	73 0.9	72 7.4	71 13.4	70 19.0	69 24.0	68 28.7	32
24	77 58.8	77 17.5	76 33.8	75 48.1	75 0.9	74 12.2	73 22.4	72 31.4	71 39.3	70 46.8	69 53.7	68 59.7	68 5.4	36
20	77 13.1	76 34.1	75 52.7	75 9.0	74 23.7	73 36.9	72 48.8	71 59.5	71 8.8	70 17.7	69 25.8	68 33.0	67 39.9	40
16	76 25.7	75 48.6	75 9.5	74 27.8	73 44.4	72 59.4	72 12.9	71 25.2	70 36.2	69 46.4	68 55.8	68 4.4	67 12.3	44
12	75 36.6	75 1.8	74 24.4	73 44.6	73 3.1	72 19.7	71 35.0	70 48.9	70 1.4	69 12.9	68 23.8	67 33.5	66 42.8	48
8	74 46.3	74 13.2	73 37.6	72 59.7	72 19.9	71 38.3	70 55.2	70 10.7	69 24.7	68 37.6	67 49.8	67 0.8	66 11.3	52
4	73 54.9	73 23.6	72 49.6	72 13.4	71 35.2	70 55.3	70 13.8	69 30.6	68 46.1	68 0.5	67 14.1	66 26.5	65 38.0	0 56
23 0	73 2.6	72 32.8	72 0.5	71 25.8	70 49.2	70 10.8	69 30.7	68 49.2	68 6.1	67 21.8	66 36.7	65 50.3	65 3.2	1 0
22 56	72 9.5	71 41.1	71 10.2	70 37.0	70 1.9	69 24.9	68 46.3	68 6.2	67 24.5	66 41.7	65 57.8	65 12.7	64 26.7	4
52	71 15.7	70 48.6	70 19.1	69 47.3	69 13.5	68 37.9	68 0.8	67 22.0	66 41.7	66 0.1	65 17.5	64 33.6	63 49.0	8
48	70 21.4	69 55.4	69 27.2	68 56.5	68 24.2	67 50.0	67 14.1	66 36.7	65 57.5	65 12.4	64 33.4	63 53.3	63 9.7	12
44	69 26.5	69 1.6	68 34.5	68 5.2	67 34.1	67 1.1	66 26.6	65 50.2	65 12.4	64 33.4	63 53.3	63 11.8	62 29.4	16
40	68 31.2	68 7.2	67 41.3	67 13.0	66 43.2	66 11.4	65 37.9	65 2.9	64 26.1	63 48.5	63 9.4	62 29.2	61 47.9	20
36	67 35.6	67 12.6	66 47.5	66 20.4	65 51.5	65 20.8	64 48.6	64 14.6	63 39.2	63 2.5	62 24.7	61 45.4	61 5.3	24
32	66 39.5	66 17.3	65 53.4	65 27.2	64 59.2	64 29.6	63 58.4	63 25.7	62 51.3	62 15.7	61 38.9	61 0.9	60 21.7	28
28	65 43.2	65 21.9	64 58.6	64 33.4	64 6.5	63 37.8	63 7.7	62 36.0	62 2.7	61 28.1	60 52.4	60 15.3	59 37.3	32
24	64 46.6	64 26.0	64 3.6	63 39.2	63 13.2	62 45.5	62 16.3	61 45.6	61 13.2	60 39.8	60 5.1	59 29.0	58 52.0	36
20	63 49.8	63 29.9	63 8.2	62 44.6	62 19.5	61 52.7	61 24.4	60 54.5	60 23.2	59 50.7	59 17.0	58 41.9	58 5.9	40
16	62 52.7	62 33.6	62 12.5	61 49.7	61 25.3	60 59.4	60 32.0	60 3.1	59 32.6	59 0.9	58 28.3	57 54.1	57 19.0	44
12	61 55.5	61 36.8	61 16.7	60 54.5	60 30.9	60 5.7	59 39.0	59 11.1	58 41.4	58 10.8	57 38.8	57 5.7	56 31.5	48
8	60 58.1	60 40.1	60 20.4	59 59.0	59 36.0	59 11.6	58 45.8	58 18.5	57 49.9	57 19.9	56 48.9	56 16.6	55 43.4	52
4	60 0.6	59 43.0	59 24.0	59 3.1	58 40.9	58 17.2	57 52.1	57 25.6	56 57.6	56 28.6	55 58.5	55 27.0	54 54.6	1 56
22 0	59 2.9	58 45.9	58 27.2	58 7.1	57 45.5	57 22.5	56 58.1	56 32.3	56 5.1	55 36.8	55 7.6	54 36.9	54 5.3	2 0
21 56	58 5.1	57 48.5	57 30.5	57 10.8	56 49.8	56 27.4	56 3.7	55 38.7	55 12.2	54 44.7	54 16.1	53 46.4	53 15.6	4
52	57 7.1	56 51.1	56 33.5	56 14.3	55 53.9	55 32.1	55 9.0	54 44.7	54 18.9	53 52.1	53 24.4	52 55.2	52 25.3	8
48	56 9.0	55 53.4	55 36.3	55 17.7	54 57.8	54 36.5	54 14.1	53 50.3	53 25.3	52 59.3	52 32.1	52 3.8	51 34.5	12
44	55 10.9	54 55.6	54 39.0	54 20.8	54 1.4	53 40.8	53 18.8	52 55.8	52 31.4	52 6.0	51 39.6	51 11.9	50 43.4	16
40	54 12.6	53 57.8	53 41.5	53 23.8	53 4.9	52 44.8	52 23.5	52 0.9	51 37.2	51 12.4	50 46.7	50 19.7	49 51.8	20
36	53 14.4	52 59.7	52 43.9	52 26.7	52 8.2	51 48.6	51 27.9	51 5.9	50 42.7	50 18.5	49 53.4	49 27.2	49 0.0	24
32	52 16.0	52 1.7	51 46.2	51 29.3	51 11.4	50 52.3	50 32.0	50 10.6	49 48.0	49 24.4	48 59.9	48 34.2	48 7.8	28
28	51 17.5	51 3.5	50 48.4	50 31.9	50 14.5	49 55.8	49 36.0	49 15.1	48 53.0	48 30.0	48 6.0	47 41.1	47 15.2	32
24	50 19.0	50 5.3	49 50.5	49 34.5	49 17.3	48 59.1	48 39.7	48 19.4	47 57.8	47 35.4	47 12.1	46 47.5	46 22.3	36
20	49 20.4	49 7.0	48 52.5	48 36.8	48 20.1	48 2.2	47 43.4	47 23.5	47 2.4	46 40.5	46 17.7	45 53.9	45 29.2	40
16	48 21.8	48 8.6	47 54.4	47 39.0	47 22.6	47 5.3	46 46.8	46 27.4	46 6.8	45 45.5	45 23.2	44 59.9	44 35.8	44
12	47 23.1	47 10.2	46 56.3	46 41.2	46 25.2	46 8.1	45 50.2	45 31.1	45 11.1	44 50.2	44 28.4	44 5.6	43 42.1	48
8	46 24.3	46 11.7	45 58.0	45 43.3	45 27.6	45 10.9	44 53.3	44 34.8	44 15.1	43 54.7	43 33.4	43 11.2	42 48.2	52
4	45 25.5	45 13.1	44 59.8	44 45.3	44 29.9	44 13.6	43 56.4	43 38.2	43 19.0	42 59.0	42 38.3	42 16.5	41 54.0	2 56
21 0	44 26.7	44 14.5	44 1.4	43 47.2	43 32.2	43 16.2	42 59.3	42 41.5	42 22.7	42 3.2	41 42.9	41 21.6	40 59.7	3 0

LATITUDE 8°.

Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	69 0 0	68 0 0	67 0 0	66 0 0	65 0 0	64 0 0	63 0 0	62 0 0	61 0 0	60 0 0	59 0 0	58 0 0	0 0
23 56	68 58.5	67 58.6	66 58.6	65 58.8	64 58.9	63 58.9	62 59.0	61 59.0	60 59.1	59 59.0	58 59.2	57 59.1	4
52	68 54.3	67 54.5	66 54.8	65 55.1	64 55.4	63 55.6	62 55.6	61 55.8	60 56.1	59 56.2	58 56.3	57 56.4	8
48	68 47.3	67 47.9	66 48.3	65 49.0	64 49.6	63 49.9	62 50.4	61 50.6	60 51.2	59 51.5	58 51.8	57 51.9	12
44	68 37.5	67 38.5	66 39.5	65 40.5	64 41.3	63 42.1	62 42.8	61 43.5	60 44.3	59 44.7	58 45.3	57 45.7	16
40	68 25.2	67 26.7	66 28.2	65 29.6	64 30.9	63 32.0	62 33.3	61 34.3	60 35.3	59 36.2	58 37.0	57 37.8	20
36	68 10.1	67 12.5	66 14.4	65 16.5	64 18.3	63 20.0	62 21.7	61 23.0	60 24.6	59 25.8	58 27.0	57 28.1	24
32	67 52.6	66 55.6	65 58.5	65 1.1	64 3.6	63 5.8	62 7.9	61 9.9	60 11.8	59 13.6	58 15.3	57 16.7	28
28	67 32.6	66 36.5	65 40.1	64 43.6	63 46.8	62 49.5	61 52.3	60 54.7	59 57.4	58 59.6	58 1.8	57 3.7	32
24	67 10.5	66 15.2	65 19.7	64 23.9	63 27.8	62 31.4	61 34.7	60 37.9	59 41.0	58 43.9	57 46.5	56 49.0	36
20	66 46.0	65 51.8	64 57.2	64 2.2	63 6.9	62 11.3	61 15.4	60 19.2	59 23.0	58 26.3	57 29.7	56 32.6	40
16	66 19.5	65 26.4	64 32.6	63 38.6	62 44.1	61 49.3	60 54.3	59 58.8	59 3.2	58 7.3	57 11.1	56 14.8	44
12	65 51.1	64 58.9	64 6.3	63 13.1	62 19.7	61 25.6	60 31.4	59 36.7	58 41.9	57 46.5	56 51.1	55 55.3	48
8	65 20.7	64 29.7	63 38.1	62 46.0	61 53.4	61 0.3	60 6.8	59 12.9	58 18.9	57 24.3	56 29.6	55 34.5	52
4	64 48.7	63 58.7	63 8.2	62 17.0	61 25.5	60 33.2	59 40.7	58 47.6	57 54.3	57 0.6	56 6.5	55 12.1	0 56
23 0	64 14.9	63 26.2	62 36.6	61 46.6	60 55.9	60 4.7	59 13.0	58 20.8	57 28.4	56 35.3	55 42.1	54 48.4	1 0
22 56	63 39.8	62 52.0	62 3.6	61 14.6	60 24.9	59 34.6	58 43.9	57 52.6	57 0.9	56 8.8	55 16.3	54 23.4	4
52	63 3.1	62 16.5	61 29.1	60 41.2	59 52.6	59 3.1	58 13.3	57 22.9	56 32.2	55 40.9	54 49.2	53 57.0	8
48	62 25.1	61 39.6	60 53.4	60 6.3	59 18.7	58 30.5	57 41.5	56 51.9	56 2.2	55 11.6	54 20.8	53 29.5	12
44	61 45.8	61 1.5	60 16.3	59 30.3	58 43.7	57 56.3	57 8.4	56 19.8	55 30.8	54 41.3	53 51.3	53 0.7	16
40	61 5.4	60 22.2	59 37.9	58 53.1	58 7.5	57 21.0	56 34.1	55 46.4	54 58.4	54 9.6	53 20.5	52 30.8	20
36	60 24.0	59 41.7	58 58.6	58 14.8	57 30.1	56 44.7	55 58.6	55 11.9	54 24.8	53 36.9	52 48.6	51 59.7	24
32	59 41.4	59 0.3	58 18.1	57 35.3	56 51.7	56 7.2	55 22.2	54 36.3	53 50.1	53 3.1	52 15.6	51 27.6	28
28	58 58.0	58 17.9	57 36.8	56 54.9	56 12.2	55 28.7	54 44.6	53 59.7	53 14.4	52 28.5	51 41.7	50 54.5	32
24	58 13.7	57 34.5	56 54.5	56 13.6	55 31.8	54 49.3	54 6.1	53 22.1	52 37.7	51 52.4	51 6.7	50 20.4	36
20	57 28.5	56 50.4	56 11.2	55 31.4	54 50.7	54 9.0	53 26.7	52 43.6	52 0.1	51 15.7	50 30.8	49 45.3	40
16	56 42.7	56 5.5	55 27.3	54 48.3	54 8.5	53 27.8	52 46.4	52 4.2	51 21.5	50 38.0	49 54.0	49 9.3	44
12	55 56.1	55 19.8	54 42.5	54 4.6	53 25.6	52 45.8	52 5.3	51 23.9	50 42.2	49 59.6	49 16.4	48 32.6	48
8	55 8.9	54 33.5	53 57.2	53 19.9	52 41.9	52 3.0	51 23.4	50 43.0	50 2.0	49 20.2	48 37.9	47 54.9	52
4	54 21.0	53 46.6	53 11.0	52 34.7	51 57.5	51 19.5	50 40.7	50 1.2	49 21.1	48 40.2	47 58.7	47 16.5	1 56
22 0	53 32.6	52 58.9	52 24.3	51 48.9	51 12.6	50 35.4	49 57.5	49 18.7	48 39.5	47 59.4	47 18.7	46 37.3	2 0
21 56	52 43.6	52 10.7	51 37.0	51 2.4	50 26.9	49 50.5	49 13.4	48 35.6	47 57.2	47 17.9	46 38.0	45 57.5	4
52	51 54.1	51 22.1	50 49.1	50 15.3	49 40.7	49 5.1	48 28.9	47 51.8	47 14.2	46 35.7	45 56.7	45 16.9	8
48	51 4.2	50 32.9	50 0.7	49 27.7	48 53.9	48 19.1	47 43.7	47 7.4	46 30.5	45 52.9	45 14.6	44 35.7	12
44	50 13.7	49 43.3	49 11.8	48 39.6	48 6.5	47 32.6	46 57.9	46 22.4	45 46.4	45 9.4	44 32.0	43 53.9	16
40	49 22.9	48 53.1	48 22.5	47 51.0	47 18.7	46 45.5	46 11.6	45 36.9	45 1.6	44 25.5	43 48.8	43 11.5	20
36	48 31.7	48 2.7	47 32.7	47 2.0	46 30.4	45 57.9	45 24.8	44 50.8	44 16.3	43 41.0	43 5.1	42 28.5	24
32	47 40.2	47 11.8	46 42.5	46 12.5	45 41.6	45 9.9	44 37.5	44 4.3	43 30.6	42 56.0	42 20.9	41 45.0	28
28	46 48.3	46 20.6	45 51.9	45 22.6	44 52.4	44 21.5	43 49.7	43 17.3	42 44.3	42 10.5	41 36.1	41 1.0	32
24	45 56.0	45 29.0	45 1.0	44 32.4	44 2.9	43 32.5	43 1.7	42 29.9	41 57.6	41 24.5	40 50.9	40 16.4	36
20	45 3.5	44 37.1	44 9.8	43 41.7	43 12.9	42 43.4	42 13.0	41 42.0	41 10.4	40 38.1	40 5.0	39 31.4	40
16	44 10.6	43 44.9	43 18.2	42 50.8	42 22.7	41 53.7	41 24.1	40 53.7	40 22.9	39 51.1	39 18.9	38 46.0	44
12	43 17.6	42 52.3	42 26.2	41 59.5	41 32.1	41 3.8	40 34.8	40 5.1	39 34.8	39 3.9	38 32.3	38 0.1	48
8	42 24.2	41 59.6	41 34.1	41 8.0	40 41.1	40 13.4	39 45.2	39 16.0	38 46.5	38 16.2	37 45.4	37 13.8	52
4	41 30.6	41 6.6	40 41.7	40 16.1	39 49.8	39 22.9	38 55.1	38 26.7	37 57.8	37 28.2	36 57.9	36 27.1	2 56
21 0	40 36.8	40 13.3	39 49.0	39 24.0	38 58.3	38 31.9	38 4.8	37 37.1	37 8.8	36 39.8	36 10.2	35 40.0	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 8°.

sterly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
e. m.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.	h. m.	
0	21 0	44 26.7	44 14.5	44 1.4	43 47.2	43 32.2	43 16.2	42 59.3	42 41.5	42 22.7	42 3.2	41 42.9	41 21.6	40 59.7	3 0	9 0	
4	20 56	43 27.9	43 15.8	43 3.0	42 49.1	42 34.3	42 18.6	42 2.1	41 44.7	41 26.3	41 7.2	40 47.4	40 26.6	40 5.2	4 8	56	
8	52	42 28.9	42 17.2	42 4.5	41 50.8	41 36.4	41 21.0	41 4.8	40 47.8	40 29.8	40 11.1	39 51.7	39 31.4	39 10.4	8	52	
12	48	41 30.0	41 18.4	41 6.0	40 52.5	40 38.4	40 23.3	40 7.5	39 50.8	39 33.1	39 14.8	38 55.9	38 36.0	38 15.6	12	48	
16	44	40 31.0	40 19.6	40 7.4	39 54.2	39 40.3	39 25.5	39 10.0	38 53.6	38 36.4	38 18.5	37 59.9	37 40.5	37 20.4	16	44	
20	40	39 32.0	39 20.8	39 8.8	38 55.8	38 42.1	38 27.7	38 12.4	37 56.4	37 39.5	37 22.0	37 3.8	36 44.8	36 25.2	20	40	
24	36	38 33.0	38 21.9	38 10.1	37 57.3	37 43.9	37 29.7	37 14.7	36 59.1	36 42.5	36 25.4	36 7.5	35 49.0	35 29.7	24	36	
28	32	37 34.0	37 23.0	37 11.4	36 58.9	36 45.6	36 31.7	36 17.0	36 1.6	35 45.5	35 28.6	35 11.3	34 53.0	34 34.2	28	32	
32	28	36 34.9	36 24.1	36 12.6	36 0.3	35 47.3	35 33.6	35 19.2	35 4.2	34 48.2	34 31.8	34 14.7	33 56.9	33 38.5	32	28	
36	24	35 35.8	35 25.1	35 13.8	35 1.7	34 48.9	34 35.5	34 21.4	34 6.6	33 51.0	33 34.8	33 18.2	33 0.7	32 42.7	36	24	
40	20	34 36.6	34 26.1	34 14.9	34 3.1	33 50.5	33 37.3	33 23.4	33 8.9	32 53.6	32 37.8	32 21.4	32 4.4	31 46.8	40	20	
44	16	33 37.5	33 27.1	33 16.1	33 4.4	32 52.1	32 39.0	32 25.5	32 11.2	31 56.2	31 40.7	31 24.7	31 7.9	30 50.7	44	16	
48	12	32 38.4	32 28.0	32 17.2	32 5.6	31 53.5	31 40.7	31 27.3	31 13.4	30 58.7	30 43.5	30 27.8	30 11.4	29 54.5	48	12	
52	8	31 39.1	31 29.0	31 18.3	31 6.9	30 55.0	30 42.3	30 29.2	30 15.5	30 1.1	29 46.2	29 30.8	29 14.8	28 58.3	52	8	
56	4	30 39.9	30 29.9	30 19.3	30 8.1	29 56.3	29 43.9	29 31.1	29 17.6	29 3.4	28 48.9	28 33.8	28 18.0	28 1.9	3 56	4	
0	20 0	29 40.7	29 30.8	29 20.4	29 9.2	28 57.6	28 45.5	28 32.8	28 19.6	28 5.7	27 51.4	27 36.6	27 21.2	27 5.4	4 0	8 0	
4	19 56	28 41.5	28 31.7	28 21.3	28 10.4	27 58.9	27 47.0	27 34.5	27 21.5	27 7.9	26 53.9	26 39.4	26 24.3	26 8.8	4 8	7 56	
8	52	27 42.2	27 32.5	27 22.3	27 11.5	27 0.3	26 48.4	26 36.2	26 23.4	26 10.1	25 56.3	25 42.1	25 27.3	25 12.1	8	52	
12	48	26 43.0	26 33.4	26 23.3	26 12.6	26 1.5	25 49.9	25 37.8	25 25.3	25 12.2	24 58.6	24 44.7	24 30.2	24 15.4	12	48	
16	44	25 43.6	25 34.1	25 24.2	25 13.6	25 2.7	24 51.3	24 39.4	24 27.0	24 14.1	24 0.9	23 47.2	23 33.1	23 18.5	16	44	
20	40	24 44.4	24 35.0	24 25.1	24 14.7	24 3.9	23 52.7	23 41.0	23 28.8	23 16.1	23 3.1	22 49.8	22 35.8	22 21.6	20	40	
24	36	23 45.1	23 35.7	23 26.0	23 15.7	23 5.1	22 53.9	22 42.5	22 30.5	22 18.1	22 5.3	21 52.2	21 38.6	21 24.6	24	36	
28	32	22 45.8	22 36.5	22 26.9	22 16.7	22 6.2	21 55.3	21 43.9	21 32.2	21 20.0	21 7.4	20 54.5	20 41.2	20 27.6	28	32	
32	28	21 46.5	21 37.3	21 27.7	21 17.7	21 7.3	20 56.5	20 45.4	20 33.8	20 21.8	20 9.5	19 56.9	19 43.7	19 30.4	32	28	
36	24	20 47.2	20 38.1	20 28.5	20 18.6	20 8.3	19 57.7	19 46.7	19 35.4	19 23.6	19 11.6	18 59.1	18 46.3	18 33.2	36	24	
0	20	19 47.9	19 38.8	19 29.4	19 19.5	19 9.4	18 58.9	18 48.1	18 36.9	18 25.4	18 13.4	18 1.3	17 48.7	17 36.0	40	20	
4	16	18 48.5	18 39.5	18 30.2	18 20.4	18 10.4	18 0.1	17 49.4	17 38.5	17 27.0	17 15.4	17 3.4	16 51.2	16 38.6	44	16	
8	12	17 49.1	17 40.2	17 31.0	17 21.3	17 11.4	17 1.2	16 50.8	16 39.9	16 28.7	16 17.2	16 5.6	15 53.5	15 41.3	48	12	
12	8	16 49.8	16 40.8	16 31.7	16 22.2	16 12.4	16 2.4	15 52.0	15 41.3	15 30.3	15 19.1	15 7.6	14 55.9	14 43.8	52	8	
16	4	15 50.4	15 41.6	15 32.5	15 23.1	15 13.4	15 3.4	14 53.2	14 42.7	14 31.9	14 20.9	14 9.7	13 53.1	13 46.4	4 56	4	
0	19 0	14 51.0	14 42.2	14 33.2	14 23.9	14 14.3	14 4.5	13 54.4	13 44.1	13 33.4	13 22.7	13 11.6	13 0.3	12 48.7	5 0	7 0	
4	18 56	13 51.6	13 42.9	13 34.0	13 24.7	13 15.2	13 5.5	12 55.7	12 45.5	12 35.0	12 24.4	12 13.6	12 2.4	11 51.2	4 6	56	
8	52	12 52.3	12 43.6	12 34.7	12 25.5	12 16.1	12 6.6	11 56.8	11 46.8	11 36.5	11 26.0	11 15.4	11 4.6	10 53.5	8	52	
12	48	11 52.9	11 44.2	11 35.4	11 26.3	11 17.0	11 7.6	10 57.9	10 48.1	10 38.0	10 27.7	10 17.3	10 6.6	9 55.9	12	48	
16	44	10 53.5	10 44.9	10 36.1	10 27.1	10 17.9	10 8.6	9 59.1	9 49.3	9 39.4	9 29.3	9 19.1	9 8.7	8 58.1	16	44	
20	40	9 54.1	9 45.5	9 36.8	9 27.8	9 18.8	9 9.6	9 0.1	8 50.6	8 40.7	8 30.9	8 20.9	8 10.6	8 0.3	20	40	
24	36	8 54.7	8 46.1	8 37.5	8 28.6	8 19.6	8 10.5	8 1.2	7 51.8	7 42.1	7 32.4	7 22.6	7 12.6	7 2.5	24	36	
28	32	7 55.3	7 46.8	7 38.2	7 29.4	7 20.5	7 11.4	7 2.3	6 53.0	6 43.5	6 33.9	6 24.3	6 14.5	6 4.7	28	32	
32	28	6 55.9	6 47.4	6 38.8	6 30.1	6 21.2	6 12.3	6 3.3	5 54.1	5 44.8	5 35.4	5 26.0	5 16.4	5 6.7	32	28	
36	24	5 56.5	5 48.0	5 39.5	5 30.8	5 22.0	5 13.2	5 4.3	4 55.3	4 46.1	4 36.9	4 27.6	4 18.2	4 8.8	36	24	
40	20	4 57.0	4 48.7	4 40.1	4 31.5	4 22.8	4 14.1	4 5.3	3 56.4	3 47.4	3 38.3	3 29.2	3 20.0	3 10.8	40	20	
44	16	3 57.7	3 49.3	3 40.8	3 32.2	3 23.6	3 15.0	3 6.2	2 57.5	2 48.6	2 39.7	2 30.8	2 21.8	2 12.8	44	16	
48	12	2 58.2	2 49.9	2 41.5	2 32.9	2 24.4	2 15.8	2 7.2	1 58.6	1 49.8	1 41.1	1 32.4	1 23.6	1 14.8	48	12	
52	8	1 58.8	1 50.4	1 42.1	1 33.6	1 25.2	1 16.7	1 8.2	0 59.6	0 51.0	0 42.5	0 34.0	0 25.3	0 16.8	52	8	
56	4	0 59.4	0 51.1	0 42.7	0 34.3	0 25.9	0 17.5	0 9.1	0 0.7	0 7.8	0 16.2	0 24.5	0 32.9	0 41.3	5 56	4	
0	18 0	0 0.0	0 8.4	0 16.7	0 25.0	0 33.3	0 41.7	0 50.0	0 58.3	1 6.6	1 14.9	1 23.1	1 31.3	1 39.5	6 0	6 0	

The heavy zigzag line is the horizon line and separates contrary names from same names.

LATITUDE 8°.																							
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.									
Declination														Declination									
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.								
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.								
15 0	21 0	40 36.8	40 13.3	39 49.0	39 24.0	38 58.3	38 31.9	38 4.8	37 37.1	37 8.8	36 39.8	36 10.2	35 40.0	3 0	9 0								
4	20 56	39 42.8	39 19.8	38 56.0	38 31.6	38 6.5	37 40.6	37 14.2	36 47.0	36 19.4	35 51.1	35 22.1	34 52.6	4	8 56								
8		38 48.6	38 26.1	38 2.9	37 39.0	37 14.4	36 49.2	36 23.3	35 56.7	35 29.7	35 2.0	34 33.8	34 4.8	8	52								
12		37 54.1	37 32.2	37 9.4	36 46.1	36 22.1	35 57.4	35 32.1	35 6.1	34 39.8	34 12.7	33 45.0	33 16.8	12	48								
16		36 59.6	36 38.0	36 15.8	35 53.0	35 29.6	35 5.4	34 40.7	34 15.4	33 49.5	33 23.0	32 55.9	32 28.4	16	44								
20		36 4.7	35 43.7	35 22.0	34 59.7	34 36.8	34 13.2	33 49.1	33 24.2	32 59.0	32 33.0	32 6.6	31 39.6	20	40								
24		35 9.8	34 49.2	34 28.0	34 6.2	33 43.8	33 20.8	32 57.1	32 32.9	32 8.2	31 42.9	31 17.0	30 50.7	24	36								
28		34 14.6	33 54.6	33 33.8	33 12.5	32 50.6	32 28.1	32 5.0	31 41.3	31 17.2	30 52.4	30 27.2	30 1.4	28	32								
32		33 19.4	32 59.7	32 39.5	32 18.6	31 57.2	31 35.2	31 12.6	30 49.5	30 25.9	30 1.8	29 37.1	29 11.9	32	28								
36		32 24.0	32 4.7	31 44.9	31 24.6	31 3.6	30 42.1	30 20.0	29 57.4	29 34.5	29 10.8	28 46.7	28 22.1	36	24								
40		31 28.5	31 9.7	30 50.2	30 30.3	30 9.9	29 48.8	29 27.3	29 5.2	28 42.7	28 19.6	27 56.1	27 32.1	40	20								
44		30 32.8	30 14.4	29 55.4	29 35.9	29 15.9	28 55.4	28 34.4	28 12.8	27 50.8	27 28.3	27 5.3	26 41.8	44	16								
48		29 37.0	29 19.0	29 0.4	28 41.4	28 21.8	28 1.8	27 41.2	27 20.1	26 58.8	26 36.7	26 14.2	25 51.3	48	12								
52		28 41.1	28 23.5	28 5.3	27 46.7	27 27.6	27 8.0	26 47.9	26 27.4	26 6.4	25 44.9	25 23.0	25 0.7	52	8								
15 56	4	27 45.1	27 27.9	27 10.1	26 51.9	26 33.3	26 14.1	25 54.5	25 34.3	25 13.9	24 52.9	24 31.6	24 9.7	3 56	4								
16 0	20 0	26 48.9	26 32.1	26 14.7	25 57.0	25 38.8	25 20.1	25 0.8	24 41.2	24 21.3	24 0.8	23 39.9	23 18.7	4 0	8 0								
4	19 56	25 52.7	25 36.2	25 19.3	25 1.9	24 44.1	24 25.8	24 7.1	23 47.9	23 28.5	23 8.5	22 48.2	22 27.4	4	7 56								
8		24 56.4	24 40.3	24 23.7	24 6.7	23 49.3	23 31.4	23 13.2	22 54.5	22 35.5	22 16.0	21 56.2	21 35.9	8	52								
12		24 0.0	23 44.2	23 28.0	23 11.4	22 54.4	22 37.0	22 19.2	22 0.9	21 42.4	21 23.4	21 4.0	20 44.3	12	48								
16		23 3.5	22 48.1	22 32.2	22 16.0	21 59.4	21 42.4	21 25.0	21 7.2	20 49.2	20 30.6	20 11.7	19 52.5	16	44								
20		22 6.9	21 51.8	21 36.3	21 20.5	21 4.3	20 47.7	20 30.7	20 13.3	19 55.7	19 37.6	19 19.3	19 0.5	20	40								
24		21 10.2	20 55.5	20 40.3	20 24.9	20 9.0	19 52.8	19 36.3	19 19.3	19 2.2	18 44.6	18 26.7	18 8.4	24	36								
28		20 13.4	19 59.0	19 44.2	19 29.1	19 13.7	18 57.9	18 41.7	18 25.2	18 8.5	17 51.3	17 33.9	17 16.2	28	32								
32		19 16.6	19 2.5	18 48.1	18 33.4	18 18.3	18 2.8	17 47.1	17 31.0	17 14.7	16 58.0	16 41.1	16 23.8	32	28								
36		18 19.7	18 5.9	17 51.8	17 37.4	17 22.7	17 7.7	16 52.3	16 36.7	16 20.8	16 4.5	15 48.1	15 31.3	36	24								
40		17 22.7	17 9.3	16 55.5	16 41.4	16 27.1	16 12.4	15 57.5	15 42.2	15 26.8	15 11.0	14 55.0	14 38.6	40	20								
44		16 25.7	16 12.5	15 59.0	15 45.4	15 31.4	15 17.1	15 2.5	14 47.7	14 32.7	14 17.3	14 1.7	13 45.8	44	16								
48		15 28.6	15 15.7	15 2.5	14 49.2	14 35.6	14 21.6	14 7.5	13 53.0	13 38.4	13 23.5	13 8.3	12 52.9	48	12								
52		14 31.5	14 18.9	14 6.0	13 52.9	13 39.7	13 26.1	13 12.3	12 58.3	12 44.1	12 29.6	12 14.9	11 59.9	52	8								
16 56	4	13 34.2	13 22.0	13 9.4	12 56.7	12 43.7	12 30.5	12 17.1	12 3.4	11 49.6	11 35.6	11 21.3	11 6.8	4 56	4								
17 0	19 0	12 37.0	12 24.9	12 12.7	12 0.3	11 47.7	11 34.8	11 21.8	11 8.5	10 55.1	10 41.5	10 27.6	10 13.6	5 0	7 0								
4	18 56	11 39.6	11 27.9	11 15.9	11 3.9	10 51.6	10 39.1	10 26.4	10 13.5	10 0.5	9 47.2	9 33.9	9 20.3	4	6 56								
8		10 42.2	10 30.8	10 19.2	10 7.4	9 55.4	9 43.2	9 30.9	9 18.4	9 5.8	8 53.0	8 40.0	8 26.8	8	52								
12		9 44.8	9 33.6	9 22.3	9 10.8	8 59.1	8 47.3	8 35.4	8 23.3	8 11.0	7 58.6	7 46.1	7 33.3	12	48								
16		8 47.3	8 36.4	8 25.4	8 14.2	8 2.9	7 51.4	7 39.8	7 28.0	7 16.2	7 4.1	6 52.0	6 39.7	16	44								
20		7 49.8	7 39.2	7 28.4	7 17.5	7 6.5	6 55.4	6 44.1	6 32.7	6 21.3	6 9.6	5 57.9	5 46.0	20	40								
24		6 52.2	6 41.8	6 31.3	6 20.8	6 10.1	5 59.3	5 48.4	5 37.3	5 26.3	5 15.0	5 3.7	4 52.2	24	36								
28		5 54.6	5 44.5	5 34.3	5 24.0	5 13.6	5 3.1	4 52.6	4 41.9	4 31.2	4 20.3	4 9.4	3 58.4	28	32								
32		4 56.9	4 47.1	4 37.2	4 27.2	4 17.1	4 6.9	3 56.7	3 46.3	3 36.1	3 25.6	3 15.1	3 4.5	32	28								
36		3 59.3	3 49.7	3 40.0	3 30.3	3 20.5	3 10.7	3 0.8	2 50.8	2 40.8	2 30.8	2 20.7	2 10.5	36	24								
40		3 1.5	2 52.2	2 42.8	2 33.4	2 23.9	2 14.3	2 4.8	1 55.2	1 45.6	1 35.9	1 26.2	1 16.4	40	20								
44		2 3.8	1 54.7	1 45.5	1 36.4	1 27.2	1 18.0	1 8.8	0 59.5	0 50.3	0 41.0	0 31.7	0 22.3	44	16								
48		1 5.9	0 57.1	0 48.2	0 39.4	0 30.5	0 21.6	0 12.7	0 3.7	0 5.1	0 14.0	0 22.9	0 31.9	48	12								
52		0 8.1	0 0.5	0 9.1	0 17.7	0 26.3	0 34.8	0 43.4	0 52.0	1 0.5	1 9.1	1 17.6	1 26.1	52	8								
17 56	4	0 49.8	0 58.1	1 6.5	1 14.8	1 23.1	1 31.3	1 39.6	1 47.9	1 56.0	2 4.2	2 12.2	2 20.4	5 56	4								
18 0	18 0	1 47.6	1 55.8	2 3.8	2 11.9	2 19.9	2 27.9	2 35.8	2 43.7	2 51.5	2 59.3	3 7.0	3 14.7	6 0	6 0								

TRUE ALTITUDE OF BODY.

LATITUDE 9°.														
Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	°	°	°	°	°	°	°	°	°	°	°	°	h. m.
24 0	81 0.0	82 0.0	83 0.0	84 0.0	85 0.0	86 0.0	87 0.0	88 0.0	89 0.0	90 0.0	89 0.0	88 0.0	87 0.0	0 0
23 56	80 56.7	81 56.3	82 55.7	83 55.1	84 54.1	85 52.7	86 50.5	87 46.0	88 35.6	89 0.8	88 35.7	87 46.3	86 50.6	0 4
52	80 46.9	81 45.4	82 43.3	83 40.7	84 37.1	85 32.0	86 24.3	87 11.1	87 46.9	88 1.5	87 47.3	87 11.6	86 24.8	8 8
48	80 31.0	81 27.6	82 23.4	83 17.9	84 10.7	85 0.8	85 46.5	86 25.1	86 52.1	87 2.2	86 52.6	86 25.9	85 47.6	12 12
44	80 9.4	81 3.8	81 56.8	82 48.1	83 36.8	84 21.8	85 1.6	85 33.7	85 55.2	86 2.9	85 55.8	85 35.0	85 3.2	16 16
40	79 42.9	80 34.6	81 24.7	82 12.5	82 57.1	83 37.6	84 12.3	84 39.6	84 57.3	85 3.7	84 58.1	84 41.1	84 14.5	20 20
36	79 11.8	80 0.9	80 47.9	81 32.2	82 13.2	82 49.6	83 20.3	83 42.9	83 59.0	84 4.4	83 59.9	83 45.6	83 22.9	24 24
32	78 37.0	79 23.5	80 7.4	80 48.6	81 26.0	81 59.0	82 26.4	82 47.1	83 0.3	83 5.2	83 1.4	82 49.3	82 29.5	28 28
28	77 58.9	78 42.8	79 23.9	80 2.1	80 36.6	81 6.6	81 31.2	81 49.8	82 1.5	82 5.9	82 2.8	81 52.3	81 34.9	32 32
24	77 17.9	77 59.3	78 38.1	79 13.7	79 45.4	80 12.8	80 35.2	80 52.0	81 2.6	81 6.6	81 4.0	80 54.9	80 39.4	36 36
20	76 34.6	77 13.7	77 49.9	78 23.4	78 52.9	79 18.1	79 38.6	79 53.8	80 3.5	80 7.4	80 5.2	79 57.1	79 43.2	40 40
16	75 49.4	76 26.5	77 0.5	77 31.7	77 59.2	78 22.5	78 41.4	78 55.3	79 4.6	79 8.1	79 6.3	78 59.0	78 46.8	44 44
12	75 2.4	75 37.5	76 9.7	76 38.7	77 4.6	77 26.2	77 43.9	77 56.7	78 5.4	78 8.9	78 7.5	78 0.9	77 49.7	48 48
8	74 14.0	74 47.3	75 17.6	75 45.1	76 9.2	76 29.7	76 46.2	76 58.2	77 6.3	77 9.7	77 8.4	77 2.8	76 52.4	52 52
4	73 24.3	73 56.0	74 24.8	74 50.7	75 13.3	75 32.7	75 48.1	75 59.6	76 7.0	76 10.4	76 9.5	76 4.3	75 54.8	0 56
23 0	72 33.6	73 3.8	73 31.1	73 55.6	74 17.1	74 35.3	74 49.9	75 0.6	75 7.9	75 11.3	75 10.5	75 5.8	74 56.9	1 0
22 56	71 42.0	72 10.8	72 36.7	73 0.1	73 20.5	73 37.8	73 51.4	74 1.6	74 8.7	74 12.2	74 11.5	74 7.0	73 59.1	4 4
52	70 49.6	71 17.0	71 41.8	72 4.1	72 23.5	72 39.9	72 52.9	73 2.8	73 9.5	73 12.8	73 12.4	73 8.6	73 1.0	8 8
48	69 56.5	70 22.7	70 46.5	71 7.7	71 26.2	71 41.9	71 54.5	72 3.8	72 10.3	72 13.4	72 13.4	72 9.9	72 3.2	12 12
44	69 2.9	69 27.9	69 50.7	70 11.0	70 28.6	70 43.8	70 55.8	71 4.8	71 11.0	71 14.3	71 14.2	71 11.3	71 5.0	16 16
40	68 8.6	68 32.8	68 54.5	69 14.0	69 31.0	69 45.5	69 57.0	70 5.6	70 11.9	70 15.0	70 15.2	70 12.4	70 6.7	20 20
36	67 14.0	67 37.1	67 58.0	68 16.7	68 33.2	68 47.1	68 58.1	69 6.6	69 12.5	69 15.8	69 16.1	69 13.7	69 8.4	24 24
32	66 18.9	66 41.2	67 1.4	67 19.4	67 35.1	67 48.5	67 59.4	68 7.4	68 13.4	68 16.5	68 17.1	68 14.9	68 10.0	28 28
28	65 23.5	65 45.0	66 4.5	66 21.8	66 36.9	66 49.9	67 0.4	67 8.4	67 14.1	67 17.4	67 18.0	67 16.2	67 11.6	32 32
24	64 27.7	64 48.5	65 7.3	65 24.0	65 38.7	65 51.2	66 1.4	66 9.2	66 14.9	66 18.2	66 18.9	66 17.3	66 13.2	36 36
20	63 31.7	63 51.8	64 9.9	64 26.2	64 40.4	64 52.6	65 2.4	65 10.0	65 15.7	65 18.9	65 19.8	65 18.4	65 14.7	40 40
16	62 35.4	62 54.8	63 12.4	63 28.3	63 41.9	63 53.8	64 3.4	64 10.8	64 16.3	64 19.7	64 20.7	64 19.5	64 16.1	44 44
12	61 38.8	61 57.8	62 14.7	62 30.1	62 43.4	62 54.9	63 4.4	63 11.5	63 17.1	63 20.4	63 21.6	63 20.7	63 17.6	48 48
8	60 42.1	61 0.4	61 17.0	61 31.8	61 44.8	61 56.0	62 5.2	62 12.4	62 17.7	62 21.2	62 22.4	62 21.8	62 19.0	52 52
4	59 45.1	60 2.9	60 19.1	60 33.5	60 46.2	60 57.1	61 6.0	61 13.1	61 18.5	61 21.9	61 23.4	61 22.8	61 20.5	1 56
22 0	58 48.0	59 5.3	59 21.0	59 35.0	59 47.5	59 58.2	60 6.9	60 13.8	60 19.2	60 22.8	60 24.2	60 24.0	60 21.8	2 0
21 56	57 50.7	58 7.7	58 22.9	58 36.6	58 48.7	58 59.1	59 7.8	59 14.6	59 19.9	59 23.5	59 25.3	59 25.1	59 23.2	4 4
52	56 53.3	57 9.8	57 24.7	57 38.0	57 49.9	58 0.5	58 8.6	58 15.5	58 20.7	58 24.3	58 26.1	58 26.3	58 24.6	8 8
48	55 55.7	56 11.9	56 26.4	56 39.5	56 51.0	57 1.0	57 9.3	57 16.1	57 21.5	57 25.1	57 27.0	57 27.3	57 26.0	12 12
44	54 58.1	55 13.8	55 28.0	55 40.8	55 52.1	56 1.9	56 10.2	56 16.9	56 22.3	56 26.0	56 28.0	56 28.4	56 27.2	16 16
40	54 0.3	54 15.6	54 29.5	54 42.0	54 53.2	55 2.9	55 11.0	55 17.7	55 22.9	55 26.7	55 28.9	55 29.5	55 28.6	20 20
36	53 2.4	53 17.4	53 31.0	53 43.3	53 54.2	54 3.8	54 11.9	54 18.4	54 23.7	54 27.5	54 29.8	54 30.7	54 30.0	24 24
32	52 4.4	52 19.0	52 32.4	52 44.4	52 55.2	53 4.7	53 12.7	53 19.2	53 24.4	53 28.4	53 30.7	53 31.8	53 31.3	28 28
28	51 6.4	51 20.7	51 33.8	51 45.6	51 56.2	52 5.5	52 13.4	52 19.9	52 25.3	52 29.1	52 31.7	52 32.8	52 32.6	32 32
24	50 8.2	50 22.2	50 35.1	50 46.7	50 57.2	51 6.4	51 14.1	51 20.6	51 26.0	51 30.1	51 32.6	51 34.0	51 33.9	36 36
20	49 10.0	49 23.8	49 36.4	49 47.8	49 58.0	50 7.1	50 14.9	50 21.4	50 26.8	50 30.9	50 33.7	50 35.1	50 35.2	40 40
16	48 11.7	48 25.2	48 37.6	48 48.8	48 59.0	49 7.9	49 15.7	49 22.1	49 27.5	49 31.7	49 34.6	49 36.2	49 36.6	44 44
12	47 13.4	47 26.7	47 38.8	47 49.9	47 59.9	48 8.8	48 16.4	48 22.9	48 28.3	48 32.5	48 35.5	48 37.4	48 37.9	48 48
8	46 14.9	46 28.0	46 40.0	46 50.8	47 0.7	47 9.5	47 17.1	47 23.6	47 29.1	47 33.4	47 36.5	47 38.5	47 39.1	52 52
4	45 16.5	45 29.3	45 41.1	45 51.8	46 1.6	46 10.3	46 17.9	46 24.3	46 29.8	46 34.3	46 37.5	46 39.5	46 40.5	2 56
21 0	44 17.9	44 30.5	44 42.2	44 52.8	45 2.5	45 11.1	45 18.7	45 25.1	45 30.7	45 35.1	45 38.4	45 40.7	45 41.8	3 0

LATITUDE 9°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	86	0.0	85	0.0	84	0.0	83	0.0	82	0.0	81	0.0	0	0
23	56	85	52.9	84	54.3	83	55.3	82	55.9	81	56.5	80	56.8	0	4
	52	85	32.6	84	37.8	83	41.3	82	43.9	81	46.0	80	47.5	8	8
	48	85	2.0	84	12.0	83	19.3	82	24.7	81	29.0	80	32.4	12	12
	44	84	23.7	83	38.8	82	50.2	81	59.0	81	6.1	80	11.7	16	16
	40	83	40.1	82	59.9	82	15.5	81	28.0	80	38.0	79	46.5	20	20
	36	82	52.8	82	17.3	81	36.4	80	52.3	80	5.5	79	17.0	24	24
	32	82	2.9	81	30.7	80	53.7	80	13.0	79	29.3	78	43.5	28	28
	28	81	11.2	80	42.1	80	8.6	79	30.9	78	50.0	78	6.9	32	32
	24	80	18.2	79	51.9	79	21.0	78	46.3	78	8.2	77	27.3	36	36
	20	79	24.1	79	0.2	78	31.8	77	59.6	77	23.9	76	45.8	40	40
	16	78	29.2	78	7.2	77	41.1	77	11.3	76	38.0	76	2.0	44	44
	12	77	33.7	77	13.6	76	49.4	76	21.7	75	50.6	75	16.6	48	48
	8	76	37.7	76	19.2	75	56.8	75	30.9	75	1.8	74	29.9	52	52
	4	75	41.5	75	24.0	75	3.2	74	39.2	74	11.9	73	42.0	0	56
23	0	74	44.8	74	28.6	74	9.6	73	46.7	73	21.2	72	52.9	1	0
22	56	73	47.9	73	33.0	73	14.9	72	53.6	72	29.6	72	2.9	4	4
	52	72	50.7	72	36.8	72	20.0	72	0.0	71	37.2	71	12.0	8	8
	48	71	53.3	71	40.4	71	24.7	71	5.9	70	44.5	70	20.5	12	12
	44	70	55.9	70	43.8	70	29.0	70	11.4	69	51.2	69	28.5	16	16
	40	69	58.4	69	47.0	69	33.0	69	16.4	68	57.3	68	35.9	20	20
	36	69	0.6	68	50.1	68	36.9	68	21.2	68	3.1	67	42.9	24	24
	32	68	2.7	67	52.8	67	40.6	67	25.7	67	8.6	66	49.4	28	28
	28	67	4.8	66	55.5	66	43.9	66	30.1	66	13.8	65	55.6	32	32
	24	66	6.8	65	58.1	65	47.3	65	34.1	65	18.8	65	1.5	36	36
	20	65	8.8	65	0.7	64	50.4	64	38.0	64	23.5	64	7.1	40	40
	16	64	10.7	64	3.1	63	53.5	63	41.7	63	28.0	63	12.3	44	44
	12	63	12.6	63	5.5	62	56.5	62	45.3	62	32.2	62	17.4	48	48
	8	62	14.4	62	7.8	61	59.3	61	48.8	61	36.4	61	22.3	52	52
	4	61	16.2	61	10.0	61	2.0	60	52.1	60	40.4	60	26.9	56	56
22	0	60	18.0	60	12.2	60	4.6	59	55.3	59	44.2	59	31.6	2	0
21	56	59	19.6	59	14.3	59	7.2	58	58.4	58	48.0	58	35.9	4	4
	52	58	21.3	58	16.3	58	9.8	58	1.5	57	51.5	57	39.9	8	8
	48	57	23.0	57	18.4	57	12.2	57	4.4	56	55.1	56	44.2	12	12
	44	56	24.7	56	20.4	56	14.6	56	7.3	55	58.5	55	48.2	16	16
	40	55	26.3	55	22.4	55	17.0	55	10.1	55	1.7	54	52.1	20	20
	36	54	27.8	54	24.3	54	19.4	54	12.9	54	5.1	53	55.9	24	24
	32	53	29.5	53	26.2	53	21.6	53	15.7	53	8.2	52	59.5	28	28
	28	52	31.1	52	28.1	52	23.9	52	18.3	52	11.3	52	3.1	32	32
	24	51	32.7	51	30.1	51	26.1	51	20.8	51	14.3	51	6.6	36	36
	20	50	34.2	50	31.9	50	28.3	50	23.4	50	17.3	50	10.0	40	40
	16	49	35.8	49	33.6	49	30.5	49	26.0	49	20.3	49	13.5	44	44
	12	48	37.2	48	35.5	48	32.6	48	28.5	48	23.3	48	16.9	48	48
	8	47	38.9	47	37.3	47	34.7	47	31.0	47	26.1	47	20.3	52	52
	4	46	40.4	46	39.2	46	36.9	46	33.5	46	29.0	46	23.5	56	56
21	0	45	41.9	45	41.0	45	39.0	45	35.9	45	31.8	45	26.6	3	0

TRUE ALTITUDE OF BODY.

LATITUDE 9°.																			
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.					
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°			
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	44 17.9	44 30.5	44 42.2	44 52.8	45 2.5	45 11.1	45 18.7	45 25.1	45 30.7	45 35.1	45 38.4	45 40.7	45 41.8				3	0
20	56	43 19.4	43 31.8	43 43.2	43 53.8	44 3.3	44 11.9	44 19.3	44 25.9	44 31.4	44 35.9	44 39.4	44 41.8	44 43.1				4	56
	52	42 20.7	42 33.0	42 44.3	42 54.7	43 4.2	43 12.6	43 20.2	43 26.6	43 32.2	43 36.8	43 40.3	43 42.9	43 44.5				8	
	48	41 22.1	41 34.1	41 45.3	41 55.6	42 4.9	42 13.4	42 20.9	42 27.3	42 32.9	42 37.7	42 41.3	42 44.1	42 45.7				12	
	44	40 23.4	40 35.3	40 46.3	40 56.4	41 5.7	41 14.2	41 21.6	41 28.1	41 33.8	41 38.5	41 42.4	41 45.2	41 47.1				16	
	40	39 24.6	39 36.4	39 47.2	39 57.3	40 6.5	40 14.8	40 22.3	40 28.8	40 34.6	40 39.5	40 43.8	40 46.4	40 48.4				20	
	36	38 25.9	38 37.4	38 48.2	38 58.2	39 7.3	39 15.6	39 23.0	39 29.6	39 35.5	39 40.4	39 44.4	39 47.5	39 49.8				24	
	32	37 27.1	37 38.5	37 49.2	37 59.0	38 8.1	38 16.3	38 23.8	38 30.4	38 36.2	38 41.3	38 45.4	38 48.7	38 51.0				28	
	28	36 28.2	36 39.5	36 50.0	36 59.8	37 8.8	37 17.1	37 24.5	37 31.1	37 37.1	37 42.1	37 46.4	37 49.8	37 52.4				32	
	24	35 29.3	35 40.5	35 50.9	36 0.6	36 9.6	36 17.9	36 25.3	36 31.9	36 37.9	36 43.1	36 47.4	36 51.1	36 53.8				36	
	20	34 30.4	34 41.5	34 51.8	35 1.4	35 10.4	35 18.6	35 26.1	35 32.7	35 38.7	35 44.0	35 48.5	35 52.2	35 55.2				40	
	16	33 31.5	33 42.4	33 52.7	34 2.3	34 11.1	34 19.4	34 26.8	34 33.5	34 39.6	34 45.0	34 49.5	34 53.4	34 56.5				44	
	12	32 32.6	32 43.4	32 53.5	33 3.1	33 11.9	33 20.1	33 27.6	33 34.3	33 40.4	33 45.9	33 50.6	33 54.6	33 57.9				48	
	8	31 33.6	31 44.3	31 54.3	32 3.8	32 12.6	32 20.9	32 28.3	32 35.1	32 41.3	32 46.9	32 51.7	32 55.9	32 59.3				52	
	4	30 34.6	30 45.2	30 55.2	31 4.5	31 13.3	31 21.5	31 29.1	31 35.8	31 42.2	31 47.9	31 52.8	31 57.1	32 0.7				3	56
20	0	29 35.6	29 46.2	29 56.0	30 5.3	30 14.1	30 22.3	30 29.8	30 36.7	30 43.1	30 48.8	30 53.9	30 58.3	31 2.1				4	0
19	56	28 36.6	28 47.0	28 56.8	29 6.0	29 14.8	29 23.0	29 30.5	29 37.5	29 44.0	29 49.8	29 55.0	29 59.6	30 3.5				4	56
	52	27 37.5	27 47.9	27 57.6	28 6.9	28 15.6	28 23.8	28 31.3	28 38.3	28 44.9	28 50.8	28 56.1	29 0.8	29 5.0				8	
	48	26 38.5	26 48.7	26 58.4	27 7.6	27 16.3	27 24.5	27 32.1	27 39.1	27 45.7	27 51.8	27 57.2	28 2.1	28 6.4				12	
	44	25 39.4	25 49.5	25 59.2	26 8.4	26 17.1	26 25.3	26 32.9	26 40.0	26 46.7	26 52.7	26 58.4	27 3.4	27 7.8				16	
	40	24 40.3	24 50.3	25 0.0	25 9.1	25 17.8	25 26.0	25 33.7	25 40.8	25 47.5	25 53.8	25 59.5	26 4.7	26 9.3				20	
	36	23 41.2	23 51.2	24 0.7	24 9.2	24 18.5	24 26.8	24 34.5	24 41.7	24 48.5	24 54.8	25 0.7	25 6.0	25 10.8				24	
	32	22 42.1	22 52.0	23 1.5	23 10.6	23 19.3	23 27.5	23 35.3	23 42.5	23 49.5	23 55.9	24 1.8	24 7.3	24 12.3				28	
	28	21 42.9	21 52.8	22 2.2	22 11.4	22 20.0	22 28.3	22 36.0	22 43.4	22 50.4	22 57.0	23 3.0	23 8.6	23 13.8				32	
	24	20 43.8	20 53.6	21 3.0	21 12.1	21 20.8	21 29.0	21 36.9	21 44.3	21 51.4	21 58.0	22 4.2	22 10.0	22 15.3				36	
	20	19 44.6	19 54.4	20 3.8	20 12.8	20 21.5	20 29.8	20 37.7	20 45.2	20 52.3	20 59.2	21 5.4	21 11.4	21 16.8				40	
	16	18 45.5	18 55.2	19 4.5	19 13.6	19 22.2	19 30.6	19 38.5	19 46.0	19 53.3	20 0.2	20 6.7	20 12.7	20 18.4				44	
	12	17 46.3	17 55.9	18 5.2	18 14.3	18 23.0	18 31.4	18 39.3	18 47.0	18 54.3	19 1.3	19 7.9	19 14.2	19 20.0				48	
	8	16 47.1	16 56.7	17 6.0	17 15.0	17 23.8	17 32.2	17 40.2	17 47.9	17 55.4	18 2.5	18 9.2	18 15.5	18 21.6				52	
	4	15 47.9	15 57.4	16 6.8	16 15.8	16 24.5	16 33.0	16 41.0	16 48.8	16 56.4	17 3.6	17 10.4	17 17.0	17 23.1				4	56
19	0	14 48.6	14 58.2	15 7.5	15 16.5	15 25.3	15 33.8	15 41.9	15 49.8	15 57.4	16 4.7	16 11.7	16 18.4	16 24.8				5	0
18	56	13 49.4	13 59.0	14 8.2	14 17.3	14 26.1	14 34.6	14 42.8	14 50.8	14 58.5	15 5.9	15 13.0	15 19.9	15 26.4				4	56
	52	12 50.2	12 59.7	13 9.0	13 18.0	13 26.8	13 35.4	13 43.7	13 51.7	13 59.5	14 7.1	14 14.4	14 21.3	14 28.1				8	
	48	11 51.0	12 0.5	12 9.7	12 18.8	12 27.6	12 36.2	12 44.6	12 52.7	13 0.6	13 8.3	13 15.7	13 22.9	13 29.7				12	
	44	10 51.8	11 1.2	11 10.5	11 19.5	11 28.4	11 37.1	11 45.5	11 53.7	12 1.7	12 9.5	12 17.1	12 24.4	12 31.4				16	
	40	9 52.5	10 2.0	10 11.2	10 20.3	10 29.2	10 37.9	10 46.4	10 54.7	11 2.8	11 10.8	11 18.4	11 25.9	11 33.2				20	
	36	8 53.3	9 2.7	9 12.0	9 21.0	9 30.0	9 38.8	9 47.3	9 55.7	10 3.9	10 12.0	10 19.8	10 27.5	10 34.9				24	
	32	7 54.1	8 3.5	8 12.7	8 21.8	8 30.8	8 39.6	8 48.2	8 56.7	9 5.1	9 13.3	9 21.3	9 29.1	9 36.7				28	
	28	6 54.8	7 4.2	7 13.4	7 22.6	7 31.6	7 40.5	7 49.2	7 57.7	8 6.2	8 14.6	8 22.7	8 30.7	8 38.5				32	
	24	5 55.6	6 5.0	6 14.2	6 23.3	6 32.4	6 41.4	6 50.1	6 58.8	7 7.4	7 15.8	7 24.2	7 32.3	7 40.3				36	
	20	4 56.3	5 5.7	5 15.0	5 24.1	5 33.2	5 42.2	5 51.1	5 59.9	6 8.6	6 17.2	6 25.6	6 34.0	6 42.1				40	
	16	3 57.0	4 6.4	4 15.7	4 24.9	4 34.1	4 43.1	4 52.1	5 0.9	5 9.8	5 18.5	5 27.1	5 35.6	5 44.0				44	
	12	2 57.8	3 7.1	3 16.4	3 25.7	3 34.9	3 44.1	3 53.1	4 2.0	4 11.0	4 19.9	4 28.7	4 37.4	4 45.9				48	
	8	1 58.5	2 7.9	2 17.2	2 26.5	2 35.8	2 45.0	2 54.1	3 3.2	3 12.3	3 21.3	3 30.2	3 39.1	3 47.8				52	
	4	0 59.3	1 8.6	1 18.0	1 27.3	1 36.6	1 45.9	1 55.2	2 4.4	2 13.5	2 22.7	2 31.8	2 40.8	2 49.8				5	56
18	0	0 0.0	0 9.4	0 18.8	0 28.2	0 37.5	0 46.9	0 56.2	1 5.6	1 14.9	1 24.2	1 33.4	1 42.6	1 51.8				6	0

The thin horizontal line indicates the passage over the Prime Vertical.

LATITUDE 9°.

Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
21 0	45 41.9	45 41.0	45 39.0	45 35.9	45 31.8	45 26.6	45 20.3	45 13.1	45 4.6	44 55.4	44 45.0	44 33.6	3 0
20 56	44 43.5	44 42.8	44 41.2	44 38.4	44 34.5	44 29.8	44 23.9	44 17.1	44 9.3	44 0.5	43 50.6	43 39.8	4
52	43 45.0	43 44.6	43 43.2	43 40.7	43 37.3	43 33.0	43 27.5	43 21.1	43 13.8	43 5.5	42 56.2	42 45.9	8
48	42 46.6	42 46.4	42 45.2	42 43.1	42 40.1	42 36.1	42 31.0	42 25.2	42 18.1	42 10.4	42 1.7	41 52.0	12
44	41 48.1	41 48.2	41 47.3	41 45.6	41 42.8	41 39.2	41 34.6	41 29.0	41 22.5	41 15.3	41 7.1	40 57.9	16
40	40 49.6	40 49.9	40 49.4	40 47.8	40 45.5	40 42.3	40 38.0	40 32.9	40 26.9	40 20.1	40 12.3	40 3.7	20
36	39 51.1	39 51.7	39 51.4	39 50.2	39 48.2	39 45.3	39 41.4	39 36.8	39 31.2	39 24.8	39 17.6	39 9.4	24
32	38 52.7	38 53.4	38 53.5	38 52.6	38 50.9	38 48.3	38 44.9	38 40.6	38 35.4	38 29.6	38 22.8	38 15.2	28
28	37 54.2	37 55.3	37 55.5	37 54.9	37 53.5	37 51.3	37 48.2	37 44.4	37 39.6	37 34.2	37 28.0	37 20.8	32
24	36 55.8	36 57.1	36 57.6	36 57.2	36 56.1	36 54.3	36 51.5	36 48.1	36 43.8	36 38.9	36 33.1	36 26.4	36
20	35 57.4	35 58.9	35 59.6	35 59.6	35 58.7	35 57.2	35 54.9	35 51.8	35 47.9	35 43.4	35 38.1	35 32.0	40
16	34 59.0	35 0.6	35 1.6	35 1.9	35 1.4	35 0.2	34 58.2	34 55.5	34 52.0	34 47.9	34 43.1	34 37.4	44
12	34 0.5	34 2.5	34 3.7	34 4.2	34 4.0	34 3.1	34 1.5	33 59.2	33 56.1	33 52.5	33 48.1	33 42.9	48
8	33 2.1	33 4.3	33 5.7	33 6.5	33 6.6	33 6.1	33 4.8	33 2.8	33 0.2	32 56.9	32 53.0	32 48.3	52
4	32 3.7	32 6.1	32 7.8	32 8.9	32 9.3	32 9.1	32 8.0	32 6.5	32 4.2	32 1.4	31 57.9	31 53.7	3 56
20 0	31 5.3	31 7.9	31 9.8	31 11.2	31 11.9	31 12.0	31 11.4	31 10.1	31 8.2	31 5.8	31 2.8	30 59.0	4 0
19 56	30 7.0	30 9.7	30 11.9	30 13.5	30 14.5	30 15.0	30 14.6	30 13.8	30 12.2	30 10.3	30 7.6	30 4.2	4
52	29 8.5	29 11.6	29 14.0	29 15.8	29 17.1	29 17.9	29 17.9	29 17.4	29 16.3	29 14.7	29 12.4	29 9.5	8
48	28 10.2	28 13.4	28 16.1	28 18.2	28 19.7	28 20.8	28 21.2	28 21.1	28 20.3	28 19.1	28 17.2	28 14.8	12
44	27 11.9	27 15.3	27 18.2	27 20.5	27 22.4	27 23.7	27 24.5	27 24.7	27 24.3	27 23.5	27 22.1	27 20.0	16
40	26 13.5	26 17.2	26 20.3	26 22.9	26 25.1	26 26.7	26 27.7	26 28.3	26 28.2	26 27.8	26 26.9	26 25.2	20
36	25 15.2	25 19.0	25 22.4	25 25.3	25 27.7	25 29.7	25 31.0	25 31.9	25 32.2	25 32.2	25 31.6	25 30.5	24
32	24 16.9	24 20.9	24 24.6	24 27.7	24 30.4	24 32.6	24 34.3	24 35.5	24 36.2	24 36.6	24 36.4	24 35.7	28
28	23 18.5	23 22.9	23 26.7	23 30.1	23 33.0	23 35.6	23 37.6	23 39.2	23 40.2	23 40.9	23 41.2	23 40.8	32
24	22 20.2	22 24.7	22 28.9	22 32.5	22 35.7	22 38.6	22 40.9	22 42.8	22 44.2	22 45.3	22 45.9	22 46.0	36
20	21 22.0	21 26.7	21 31.0	21 35.0	21 38.5	21 41.5	21 44.2	21 46.5	21 48.2	21 49.7	21 50.7	21 51.2	40
16	20 23.7	20 28.6	20 33.2	20 37.4	20 41.1	20 44.6	20 47.5	20 50.1	20 52.2	20 54.0	20 55.5	20 56.4	44
12	19 25.5	19 30.6	19 35.4	19 39.8	19 43.8	19 47.6	19 50.9	19 53.8	19 56.2	19 58.5	20 0.3	20 1.6	48
8	18 27.3	18 32.6	18 37.6	18 42.3	18 46.6	18 50.6	18 54.2	18 57.5	19 0.3	19 2.9	19 5.1	19 6.8	52
4	17 29.1	17 34.6	17 39.9	17 44.8	17 49.4	17 53.7	17 57.5	18 1.2	18 4.4	18 7.3	18 9.8	18 12.0	4 56
19 0	16 30.8	16 36.7	16 42.1	16 47.3	16 52.2	16 56.8	17 0.9	17 4.8	17 8.4	17 11.7	17 14.7	17 17.3	5 0
18 56	15 32.7	15 38.7	15 44.5	15 49.9	15 55.0	15 59.8	16 4.3	16 8.6	16 12.4	16 16.2	16 19.5	16 22.5	4
52	14 34.5	14 40.8	14 46.7	14 52.4	14 57.8	15 3.0	15 7.8	15 12.3	15 16.6	15 20.6	15 24.4	15 27.8	8
48	13 36.5	13 42.9	13 49.1	13 55.0	14 0.7	14 6.1	14 11.2	14 16.1	14 20.7	14 25.1	14 29.2	14 33.1	12
44	12 38.3	12 45.0	12 51.4	12 57.6	13 3.5	13 9.3	13 14.7	13 20.0	13 24.9	13 29.6	13 34.1	13 38.3	16
40	11 40.3	11 47.1	11 53.8	12 0.2	12 6.4	12 12.5	12 18.3	12 23.8	12 29.1	12 34.2	12 39.1	12 43.6	20
36	10 42.2	10 49.3	10 56.2	11 2.9	11 9.4	11 15.7	11 21.8	11 27.7	11 33.3	11 38.8	11 44.0	11 49.0	24
32	9 44.2	9 51.5	9 58.6	10 5.6	10 12.4	10 19.0	10 25.3	10 31.6	10 37.5	10 43.4	10 49.0	10 54.4	28
28	8 46.2	8 53.7	9 1.1	9 8.3	9 15.3	9 22.3	9 28.9	9 35.5	9 41.8	9 48.1	9 54.0	9 59.8	32
24	7 48.2	7 55.9	8 3.6	8 11.1	8 18.4	8 25.6	8 32.6	8 39.4	8 46.1	8 52.7	8 59.2	9 5.2	36
20	6 50.3	6 58.2	7 6.1	7 13.8	7 21.4	7 28.9	7 36.3	7 43.5	7 50.4	7 57.4	8 4.2	8 10.8	40
16	5 52.3	6 0.6	6 8.6	6 16.6	6 24.5	6 32.3	6 40.0	6 47.5	6 54.8	7 2.1	7 9.3	7 16.3	44
12	4 54.5	5 2.9	5 11.3	5 19.5	5 27.6	5 35.8	5 43.7	5 51.6	5 59.2	6 7.0	6 14.5	6 21.9	48
8	3 56.6	4 5.2	4 13.8	4 22.4	4 30.8	4 39.2	4 47.5	4 55.7	5 3.7	5 11.8	5 19.7	5 27.5	52
4	2 58.8	3 7.6	3 16.5	3 25.3	3 34.0	3 42.8	3 51.3	3 59.8	4 8.3	4 16.7	4 25.0	4 33.2	5 56
18 0	2 1.0	2 10.2	2 19.2	2 28.3	2 37.3	2 46.3	2 55.2	3 4.0	3 12.8	3 21.6	3 30.3	3 38.9	6 0

LATITUDE 9°.																																									
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.																											
0°		1°		2°		3°		4°		5°		6°		7°		8°		9°		10°		11°		12°																	
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.														
24	0	81	0	80	0	79	0	78	0	77	0	76	0	75	0	74	0	73	0	72	0	71	0	70	0	69	0	0	0												
23	56	80	56	79	57	78	57	77	57	76	57	75	57	74	58	0	73	58	0	72	58	2	71	58	5	70	58	4	69	58	5	4									
	52	80	46	9	79	48	3	78	49	0	77	50	0	76	51	0	75	51	5	74	52	1	73	52	3	72	52	9	71	53	6	70	53	9	69	54	1	68	54	3	8
	48	80	31	0	79	33	8	78	35	8	77	37	9	76	39	8	75	41	4	74	42	3	73	43	2	72	44	2	71	45	4	70	46	0	69	46	8	68	47	2	12
	44	80	9	4	79	14	2	78	18	0	77	21	4	76	24	2	75	26	8	74	28	8	73	30	5	72	32	3	71	33	9	70	35	2	69	36	6	68	37	6	16
	40	79	42	9	78	49	7	77	55	4	77	0	5	76	4	6	75	8	5	74	11	6	73	14	5	72	17	1	71	19	6	70	21	6	69	23	5	68	25	2	20
	36	79	11	8	78	21	0	77	28	6	76	35	5	75	41	5	74	46	7	73	51	2	72	55	0	71	58	8	71	2	2	70	5	1	69	7	7	68	10	0	24
	32	78	37	0	77	48	5	76	58	2	76	7	0	75	14	8	74	21	8	73	27	5	72	32	5	71	37	4	70	42	1	69	45	9	68	49	3	67	52	5	28
	28	77	58	9	77	12	8	76	24	7	75	35	4	74	45	0	73	53	5	73	0	9	72	7	3	71	13	4	70	19	1	69	24	0	68	28	5	67	32	5	32
	24	77	17	9	76	34	2	75	48	3	75	1	1	74	12	3	73	22	5	72	31	4	71	39	4	70	46	8	69	53	6	68	59	7	68	5	3	67	10	4	36
	20	76	34	6	75	53	0	75	9	4	74	24	1	73	37	2	72	49	0	71	59	4	71	8	9	70	17	7	69	25	9	68	33	0	67	39	8	66	45	9	40
	16	75	49	4	75	9	9	74	28	1	73	44	8	72	59	7	72	13	2	71	25	2	70	36	1	69	46	4	68	55	9	68	4	4	67	12	1	66	19	3	44
	12	75	2	4	74	24	9	73	45	0	73	3	4	72	20	1	71	35	4	70	48	9	70	1	2	69	12	9	68	23	8	67	33	5	66	42	5	65	50	8	48
	8	74	14	0	73	38	4	73	0	2	72	20	4	71	38	7	70	55	5	70	10	8	69	24	6	68	37	6	67	49	7	67	0	7	66	11	1	65	20	5	52
	4	73	24	3	72	50	3	72	14	0	71	35	7	70	55	6	70	14	0	69	30	8	68	46	3	68	0	5	67	14	0	66	26	3	65	37	8	64	48	4	0 56
23	0	72	33	6	72	1	3	71	26	4	70	49	7	70	11	2	69	31	1	68	49	3	68	6	0	67	21	8	66	36	7	65	50	2	65	2	9	64	14	5	1 0
22	56	71	42	0	71	11	0	70	37	6	70	2	5	69	25	5	68	46	8	68	6	3	67	24	5	66	41	7	65	57	8	65	12	6	64	26	3	63	39	3	4
	52	70	49	6	70	19	9	69	48	0	69	14	2	68	38	5	68	1	2	67	22	1	66	41	7	66	0	1	65	17	5	64	33	5	63	48	5	63	2	5	8
	48	69	56	5	69	28	1	68	57	4	68	25	0	67	50	5	67	14	5	66	36	9	65	57	7	65	17	3	64	35	8	63	53	2	63	9	4	62	24	6	12
	44	69	2	9	68	35	5	68	6	1	67	34	8	67	1	6	66	27	0	65	50	5	65	12	6	64	33	4	63	53	2	63	11	5	62	29	0	61	45	4	16
	40	68	8	6	67	42	5	67	14	0	66	43	8	66	12	0	65	38	4	65	3	1	64	26	2	63	48	5	63	9	3	62	29	0	61	47	4	61	4	9	20
	36	67	14	0	66	48	6	66	21	3	65	52	3	65	21	5	64	49	2	64	14	9	63	39	3	63	2	5	62	24	7	61	45	2	61	4	8	60	23	3	24
	32	66	18	9	65	54	5	65	28	2	65	0	2	64	30	3	63	58	9	63	25	9	62	51	4	62	15	7	61	38	8	61	0	6	60	21	3	59	40	8	28
	28	65	23	5	64	59	9	64	34	6	64	7	5	63	38	6	63	8	2	62	36	2	62	2	8	61	28	1	60	52	3	60	15	1	59	36	8	58	57	4	32
	24	64	27	7	64	5	0	63	40	4	63	14	2	62	46	3	62	16	9	61	45	9	61	13	4	60	39	8	60	4	9	59	28	7	58	51	4	58	13	0	36
	20	63	31	7	63	9	8	62	45	8	62	20	5	61	53	5	61	25	1	60	54	9	60	23	3	59	50	7	59	16	9	58	41	6	58	5	3	57	27	8	40
	16	62	35	4	62	14	1	61	51	0	61	26	3	61	0	3	60	32	7	60	3	4	59	32	8	59	0	9	58	28	1	57	53	8	57	18	4	56	41	9	44
	12	61	38	8	61	18	2	60	55	8	60	32	1	60	6	5	59	39	8	59	11	5	58	41	6	58	10	8	57	38	6	57	5	3	56	30	8	55	55	3	48
	8	60	42	1	60	21	9	60	0	4	59	37	3	59	12	6	58	46	5	58	18	9	57	50	0	57	19	9	56	48	7	56	16	2	55	42	7	55	8	0	52
	4	59	45	1	59	25	7	59	4	6	58	42	2	58	18	2	57	52	9	57	26	0	56	57	9	56	28	6	55	58	2	55	26	6	54	53	8	54	20	1	1 56
22	0	58	48	0	58	29	1	58	8	7	57	46	8	57	23	5	56	58	9	56	32	8	56	5	3	55	36	8	55	7	4	54	36	4	54	4	6	53	31	6	2 0
21	56	57	50	7	57	32	4	57	12	4	56	51	2	56	28	5	56	4	6	55	39	1	55	12	4	54	44	7	54	15	9	53	45	9	53	14	7	52	42	6	4
	52	56	53	3	56	35	5	56	16	0	55	55	3	55	33	2	55	9	8	54	45	2	54	19	2	53	52	1	53	24	1	52	54	8	52	24	5	51	53	0	8
	48	55	55	7	55	38	4	55	19	4	54	59	3	54	37	7	54	15	0	53	50	8	53	25	6	52	59	3	52	31	9	52	3	3	51	33	7	51	3	1	12
	44	54	58	1	54	41	1	54	22	6	54	3	0	53	42	0	53	19	8	52	56	3	52	31	6	52	6	0	51	39	4	51	11	4	50	42	5	50	12	6	16
	40	54	0	3	53	43	7	53	25	7	53	6	5	52	46	1	52	24	5	52	1	5	51	37	5	51	12	4	50	46	4	50	19	2	49	51	0	49	21	7	20
	36	53	2	4	52	46	2	52	28	6	52	9	9	51	49	9	51	28	9	51	6	6	50	43	0	50	18	5	49	53	1	49	26	6	48	59	1	48	30	5	24
	32	52	4	4	51	48	5	51	31	4	51	13	1	50	53	6	50	33	1	50	11	2	49	48	3	49	24	4	48	59	6	48	33	6	48	6	8	47	38	9	28
	28	51	6	4	50	50	8	50	34	0	50	16	2	49	57	1	49	57	1	49	15	7	48	53	3	48	30	0	48	5	7	47	40	5	47	14	1	46	47	0	32
	24	50	8	2	49	52	9	49	36	5	49	19	1	49	0	5	48	40	8	48	20	4	47	58	1	47	35	4	47	11	8	46	46	9	46	21	3	45	54	7	36
	20	49	10	0	48	55	1	48	39	0	48	21	9	48	3	7	47	44	5	47	24	1	47	2	8	46	40	5	46	17	4	45	53	2	45	28	1	45	2	1	40
	16	48	11	7	47	57	1	47	41	3	47	24	5	47	6	7	46	48	0	46	28	1	46	7	2	45	45	5	45	22	8	44	59	2	44	34	7	44	9	3	44
	12	47	13	4	46	59	0	46	43	5	46	27	1	46	9	7	45	51	3	45	31	9	45	11	4	44	50	2	44	28	1	44	4	9	43	41	0	43	16	2	48
	8	46	14	9	46	0	8	45	45	7	45	29	6	45																											

LATITUDE 9°.													
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	68 0 0	67 0 0	66 0 0	65 0 0	64 0 0	63 0 0	62 0 0	61 0 0	60 0 0	59 0 0	58 0 0	57 0 0	0 0
23 56	67 58.7	66 58.6	65 58.8	64 58.8	63 58.8	62 58.8	61 58.9	60 59.1	59 59.0	58 59.1	57 59.2	56 59.1	4
52	67 54.6	66 54.8	65 55.2	64 55.2	63 55.4	62 55.8	61 55.9	60 56.0	59 56.0	58 56.3	57 56.6	56 56.5	8
48	67 47.9	66 48.4	65 49.0	64 49.4	63 49.8	62 50.5	61 50.7	60 51.0	59 51.3	58 51.8	57 52.1	56 52.2	12
44	67 38.6	66 39.4	65 40.5	64 41.3	63 42.0	62 42.8	61 43.4	60 44.1	59 44.6	58 45.2	57 45.7	56 46.2	16
40	67 26.7	66 28.1	65 29.6	64 30.8	63 32.0	62 33.2	61 34.2	60 35.2	59 36.0	58 36.9	57 37.7	56 38.4	20
36	67 12.4	66 14.4	65 16.5	64 18.1	63 19.8	62 21.6	61 23.0	60 24.4	59 25.5	58 26.9	57 28.0	56 29.0	24
32	66 55.6	65 58.4	65 1.0	64 3.2	63 5.6	62 7.9	61 9.8	60 11.5	59 13.3	58 15.0	57 16.7	56 18.0	28
28	66 36.5	65 40.0	64 43.4	63 46.5	62 49.3	61 52.2	60 54.6	59 57.0	58 59.2	58 1.5	57 3.5	56 5.3	32
24	66 15.1	65 19.4	64 23.7	63 27.6	62 31.1	61 34.7	60 37.7	59 40.6	58 43.5	57 46.2	56 48.7	55 51.0	36
20	65 51.6	64 56.9	64 2.0	63 6.6	62 10.9	61 15.2	60 18.8	59 22.6	58 25.9	57 29.3	56 32.3	55 35.1	40
16	65 26.2	64 32.4	63 38.4	62 43.7	61 48.9	60 53.9	59 58.5	59 2.7	58 6.7	57 10.7	56 14.4	55 17.7	44
12	64 58.7	64 6.0	63 12.8	62 19.2	61 25.1	60 31.0	59 36.3	58 41.3	57 45.9	56 50.5	55 54.9	54 58.8	48
8	64 29.4	63 37.6	62 45.6	61 52.8	60 59.7	60 6.3	59 12.4	58 18.3	57 23.6	56 28.9	55 33.8	54 38.4	52
4	63 58.5	63 7.7	62 16.6	61 24.9	60 32.6	59 40.1	58 47.0	57 53.6	56 59.8	56 5.8	55 11.4	54 16.7	0 56
23 0	63 25.8	62 36.1	61 46.1	60 55.3	60 4.0	59 12.4	58 20.1	57 27.5	56 34.5	55 41.3	54 47.6	53 53.6	1 0
22 56	62 51.6	62 3.2	61 14.0	60 24.2	59 33.9	58 43.2	57 51.8	57 0.0	56 7.7	55 15.3	54 22.5	53 29.2	4
52	62 16.1	61 28.6	60 40.6	59 51.8	59 2.3	58 12.6	57 22.1	56 31.1	55 39.7	54 48.1	53 56.0	53 3.5	8
48	61 39.1	60 52.7	60 5.7	59 17.9	58 29.5	57 40.6	56 51.0	56 1.0	55 10.4	54 19.6	53 28.3	52 36.5	12
44	61 0.9	60 15.6	59 29.6	58 42.8	57 55.3	57 7.4	56 18.7	55 29.6	54 39.9	53 49.9	52 59.4	52 8.4	16
40	60 21.6	59 37.3	58 52.3	58 6.5	57 20.0	56 33.0	55 45.3	54 56.9	54 8.2	53 19.1	52 29.4	51 39.1	20
36	59 41.1	58 57.9	58 13.9	57 29.0	56 43.5	55 57.5	55 10.6	54 23.3	53 35.3	52 47.0	51 58.2	51 8.7	24
32	58 59.5	58 17.3	57 34.4	56 50.5	56 5.9	55 20.8	54 34.9	53 48.5	53 1.4	52 13.9	51 25.9	50 37.3	28
28	58 17.1	57 35.8	56 53.9	56 11.0	55 27.4	54 43.2	53 58.2	53 12.7	52 26.4	51 39.8	50 52.5	50 4.8	32
24	57 33.7	56 53.5	56 12.5	55 30.5	54 47.9	54 4.7	53 20.5	52 35.8	51 50.5	51 4.7	50 18.3	49 31.3	36
20	56 49.5	56 10.3	55 30.1	54 49.2	54 7.5	53 25.2	52 41.9	51 58.0	51 13.5	50 28.6	49 43.2	48 57.0	40
16	56 4.6	55 26.2	54 47.1	54 7.0	53 26.1	52 44.7	52 2.4	51 19.4	50 35.8	49 51.8	49 7.0	48 21.7	44
12	55 18.8	54 41.4	54 3.2	53 24.0	52 44.0	52 3.5	51 22.0	50 40.0	49 57.2	49 13.9	48 30.1	47 45.6	48
8	54 32.5	53 55.9	53 18.6	52 40.3	52 1.2	51 21.5	50 40.9	49 59.7	49 17.8	48 35.4	47 52.3	47 8.6	52
4	53 45.4	53 9.7	52 33.3	51 55.8	51 17.6	50 38.8	49 59.0	49 18.6	48 37.0	47 56.0	47 13.7	46 30.8	1 56
22 0	52 57.8	52 22.9	51 47.3	51 10.7	50 33.3	49 55.4	49 16.4	48 36.9	47 56.6	47 15.9	46 34.5	45 52.3	2 0
21 56	52 9.5	51 35.6	51 0.7	50 25.0	49 48.4	49 11.2	48 33.2	47 54.4	47 14.9	46 35.0	45 54.4	45 13.1	4
52	51 20.8	50 47.6	50 13.6	49 38.6	49 2.9	48 26.5	47 49.3	47 11.3	46 32.7	45 53.5	45 13.6	44 33.1	8
48	50 31.5	49 59.1	49 25.9	48 51.8	48 16.8	47 41.2	47 4.7	46 27.6	45 49.8	45 11.3	44 32.3	43 52.5	12
44	49 41.9	49 10.2	48 37.8	48 4.3	47 30.2	46 55.4	46 19.8	45 43.3	45 6.1	44 28.6	43 50.3	43 11.3	16
40	48 51.7	48 20.8	47 49.1	47 16.4	46 42.9	46 9.0	45 34.0	44 58.4	44 22.1	43 45.2	43 7.7	42 29.5	20
36	48 1.2	47 30.9	47 0.0	46 28.0	45 55.4	45 22.0	44 47.8	44 13.0	43 37.4	43 1.3	42 24.6	41 47.2	24
32	47 10.3	46 40.7	46 10.4	45 39.2	45 7.2	44 34.6	44 1.1	43 27.0	42 52.2	42 16.9	41 40.9	41 4.2	28
28	46 19.0	45 50.1	45 20.5	44 49.9	44 18.6	43 46.7	43 14.0	42 40.6	42 6.6	41 32.0	40 56.7	40 20.7	32
24	45 27.4	44 59.2	44 30.2	44 0.2	43 29.6	42 58.5	42 26.4	41 53.8	41 20.4	40 46.4	40 12.0	39 36.7	36
20	44 35.4	44 7.8	43 39.4	43 10.2	42 40.3	42 9.8	41 38.5	41 6.5	40 33.9	40 0.6	39 26.8	38 52.3	40
16	43 43.1	43 16.0	42 48.4	42 19.8	41 50.6	41 20.8	40 50.0	40 18.9	39 46.8	39 14.3	38 41.2	38 7.4	44
12	42 50.5	42 24.1	41 57.0	41 29.1	41 0.6	40 31.3	40 1.3	39 30.6	38 59.4	38 27.5	37 55.1	37 21.9	48
8	41 57.7	41 31.8	41 5.4	40 38.1	40 10.1	39 41.6	39 12.1	38 42.2	38 11.5	37 40.4	37 8.6	36 36.2	52
4	41 4.6	40 39.4	40 13.5	39 46.7	39 19.4	38 51.4	38 22.7	37 53.3	37 23.3	36 52.8	36 21.8	35 50.0	2 56
21 0	40 11.3	39 46.6	39 21.3	38 55.2	38 28.3	38 0.9	37 32.9	37 4.2	36 34.8	36 4.9	35 34.5	35 3.5	3 0

LATITUDE 9°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	h. m.
15 0	21 0	44 17.9	44 4.3	43 49.7	43 34.3	43 17.9	43 0.6	42 42.4	42 23.1	42 3.2	41 42.6	41 20.9	40 58.5	40 35.2	3 0	9 0	
4	20 56	43 19.4	43 6.0	42 51.6	42 36.5	42 20.4	42 3.5	41 45.5	41 26.7	41 7.2	40 46.9	40 25.8	40 3.9	39 41.1	4	8 56	
8	52	42 20.7	42 7.6	41 53.5	41 38.6	41 22.8	41 6.2	40 48.7	40 30.2	40 11.1	39 51.3	39 30.5	39 9.1	38 46.9	8	52	
12	48	41 22.1	41 9.1	40 55.3	40 40.7	40 25.1	40 8.9	39 51.7	39 33.6	39 14.8	38 55.4	38 35.1	38 14.2	37 52.4	12	48	
16	44	40 23.4	40 10.7	39 57.0	39 42.6	39 27.4	39 11.4	38 54.5	38 36.8	38 18.5	37 59.4	37 39.6	37 19.0	36 57.7	16	44	
20	40	39 24.6	39 12.1	38 58.7	38 44.5	38 29.6	38 13.8	37 57.3	37 40.0	37 22.0	37 3.4	36 43.9	36 23.8	36 2.8	20	40	
24	36	38 25.9	38 13.5	38 0.3	37 46.4	37 31.6	37 16.2	37 0.0	36 43.0	36 25.4	36 7.1	35 48.1	35 28.3	35 7.9	24	36	
28	32	37 27.1	37 14.9	37 1.9	36 48.2	36 33.7	36 18.5	36 2.6	35 45.9	35 28.6	35 10.8	34 52.0	34 32.7	34 12.6	28	32	
32	28	36 28.2	36 16.2	36 3.3	35 49.9	35 35.6	35 20.8	35 5.1	34 48.7	34 31.8	34 14.2	33 56.0	33 37.0	33 17.4	32	28	
36	24	35 29.3	35 17.5	35 4.8	34 51.6	34 37.6	34 23.0	34 7.6	33 51.6	33 34.8	33 17.7	32 59.7	32 41.2	32 21.9	36	24	
40	20	34 30.4	34 18.7	34 6.3	33 53.2	33 39.5	33 25.1	33 10.0	32 54.2	32 37.8	32 20.9	32 3.4	31 45.1	31 26.4	40	20	
44	16	33 31.5	33 19.9	33 7.6	32 54.8	32 41.2	32 27.1	32 12.2	31 56.7	31 40.7	31 24.2	31 6.9	30 49.1	30 30.6	44	16	
48	12	32 32.6	32 21.1	32 9.0	31 56.3	31 43.0	31 29.0	31 14.5	30 59.2	30 43.5	30 27.2	30 10.3	29 52.9	29 34.8	48	12	
52	8	31 33.6	31 22.3	31 10.3	30 57.8	30 44.7	30 31.0	30 16.6	30 1.7	29 46.2	29 30.2	29 13.7	28 56.6	28 38.8	52	8	
15 56	4	30 34.6	30 23.4	30 11.6	29 59.2	29 46.3	29 32.8	29 18.7	29 4.0	28 48.9	28 33.2	28 16.9	28 0.1	27 42.8	3 56	4	
16 0	20 0	29 35.6	29 24.6	29 12.8	29 0.7	28 47.9	28 34.6	28 20.7	28 6.3	27 51.4	27 36.0	27 20.1	27 3.6	26 46.6	4 0	8 0	
4	19 56	28 36.6	28 25.6	28 14.1	28 2.0	27 49.5	27 36.4	27 22.7	27 8.5	26 53.9	26 38.8	26 23.1	26 7.0	25 50.3	4	7 56	
8	52	27 37.5	27 26.7	27 15.2	27 3.4	26 50.9	26 38.1	26 24.6	26 10.7	25 56.3	25 41.5	25 26.1	25 10.2	24 53.9	8	52	
12	48	26 38.5	26 27.7	26 16.5	26 4.7	25 52.5	25 39.8	25 26.5	25 12.7	24 58.6	24 44.1	24 29.0	24 13.4	23 57.5	12	48	
16	44	25 39.4	25 28.7	25 17.5	25 6.0	24 53.9	24 41.4	24 28.3	24 14.7	24 0.9	23 46.6	23 31.8	23 16.6	23 0.9	16	44	
20	40	24 40.3	24 29.7	24 18.6	24 7.2	23 55.3	23 43.0	23 30.1	23 16.8	23 3.1	22 49.1	22 34.5	22 19.6	22 4.3	20	40	
24	36	23 41.2	23 30.7	23 19.7	23 8.4	22 56.6	22 44.5	22 31.8	22 18.7	22 5.3	21 51.5	21 37.2	21 22.6	21 7.5	24	36	
28	32	22 42.1	22 31.7	22 20.9	22 9.6	21 58.0	21 46.0	21 33.5	21 20.6	21 7.4	20 53.9	20 39.9	20 25.5	20 10.7	28	32	
32	28	21 42.9	21 32.6	21 21.8	21 10.8	20 59.3	20 47.5	20 35.2	20 22.5	20 9.5	19 56.2	19 42.4	19 28.3	19 13.8	32	28	
36	24	20 43.8	20 33.6	20 22.9	20 11.9	20 0.6	19 48.9	19 36.8	19 24.3	19 11.6	18 58.4	18 44.9	18 31.0	18 16.8	36	24	
40	20	19 44.6	19 34.5	19 23.9	19 13.0	19 1.8	18 50.3	18 38.3	18 26.0	18 13.4	18 0.7	17 47.3	17 33.8	17 19.8	40	20	
44	16	18 45.5	18 35.4	18 24.9	18 14.1	18 3.0	17 51.6	17 39.9	17 27.7	17 15.4	17 2.7	16 49.8	16 36.4	16 22.8	44	16	
48	12	17 46.3	17 36.2	17 25.8	17 15.2	17 4.3	16 53.0	16 41.4	16 29.5	16 17.2	16 4.8	15 52.0	15 39.0	15 25.6	48	12	
52	8	16 47.1	16 37.1	16 26.8	16 16.3	16 5.4	15 54.3	15 42.9	15 31.0	15 19.1	15 6.9	14 54.3	14 41.5	14 28.4	52	8	
16 56	4	15 47.9	15 37.9	15 27.8	15 17.3	15 6.5	14 55.6	14 44.3	14 32.7	14 20.9	14 8.9	13 56.5	13 44.0	13 31.1	4 56	4	
17 0	19 0	14 48.6	14 38.8	14 28.6	14 18.3	14 7.7	13 56.8	13 45.7	13 34.3	13 22.7	13 10.8	12 58.7	12 46.4	12 33.8	5 0	7 0	
4	18 56	13 49.4	13 39.6	13 29.6	13 19.3	13 8.8	12 58.1	12 47.1	12 35.8	12 24.4	12 12.8	12 0.8	11 48.8	11 36.3	4	6 56	
8	52	12 50.2	12 40.5	12 30.5	12 20.3	12 9.9	11 59.3	11 48.4	11 37.3	11 26.0	11 14.7	11 2.9	10 51.0	10 38.9	8	52	
12	48	11 51.0	11 41.3	11 31.3	11 21.2	11 11.0	11 0.5	10 49.8	10 38.8	10 27.7	10 16.5	10 5.0	9 53.3	9 41.4	12	48	
16	44	10 51.8	10 42.1	10 32.2	10 22.2	10 12.0	10 1.6	9 51.0	9 40.2	9 29.3	9 18.2	9 7.0	8 55.5	8 43.9	16	44	
20	40	9 52.5	9 42.9	9 33.1	9 23.2	9 13.0	9 2.8	8 52.3	8 41.6	8 30.9	8 20.0	8 8.9	7 57.7	7 46.3	20	40	
24	36	8 53.3	8 43.7	8 34.0	8 24.1	8 14.1	8 3.9	7 53.5	7 43.0	7 32.4	7 21.8	7 10.8	6 59.8	6 48.6	24	36	
28	32	7 54.1	7 44.5	7 34.8	7 25.0	7 15.0	7 5.0	6 54.7	6 44.3	6 33.9	6 23.4	6 12.8	6 1.9	5 50.9	28	32	
32	28	6 54.8	6 45.3	6 35.6	6 25.9	6 16.0	6 6.1	5 56.0	5 45.7	5 35.4	5 25.1	5 14.5	5 4.0	4 53.3	32	28	
36	24	5 55.6	5 46.1	5 36.4	5 26.8	5 17.0	5 7.1	4 57.1	4 47.0	4 36.9	4 26.7	4 16.4	4 6.0	3 55.5	36	24	
40	20	4 56.3	4 46.8	4 37.2	4 27.6	4 17.9	4 8.2	3 58.3	3 48.3	3 38.3	3 28.3	3 18.2	3 8.0	2 57.6	40	20	
44	16	3 57.0	3 47.6	3 38.0	3 28.5	3 18.9	3 9.2	2 59.4	2 49.6	2 39.7	2 29.9	2 19.9	2 9.9	1 59.8	44	16	
48	12	2 57.8	2 48.3	2 38.9	2 29.3	2 19.8	2 10.2	2 0.5	1 50.8	1 41.1	1 31.5	1 21.6	1 11.8	1 2.0	48	12	
52	8	1 58.5	1 49.1	1 39.7	1 30.2	1 20.7	1 11.2	1 1.6	0 52.0	0 42.5	0 32.9	0 23.3	0 13.7	0 4.1	52	8	
17 56	4	0 59.3	0 49.9	0 40.4	0 31.0	0 21.6	0 12.2	0 2.8	0 6.8	0 16.2	0 25.6	0 35.0	0 44.5	0 53.9	5 56	4	
18 0	18 0	0 0.0	0 9.4	0 18.8	0 28.2	0 37.5	0 46.9	0 56.2	1 5.6	1 14.9	1 24.2	1 33.4	1 42.6	1 51.8	6 0	6 0	

TRUE ALTITUDE OF BODY.

LATITUDE 10°.																	
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.														Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°			
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
24	0	80	0	81	0	82	0	83	0	84	0	85	0	86	0	87	0
23	56	79	57	80	56	78	56	82	55	78	55	84	54	85	52	78	50
	52	79	48	80	47	81	45	82	43	83	40	84	37	85	32	86	24
	48	79	33	80	31	81	27	82	23	83	18	84	10	85	1	86	25
	44	79	14	80	9	81	4	81	57	82	48	83	37	84	22	85	2
	40	78	49	79	43	80	34	81	25	82	12	82	57	83	38	0	84
	36	78	21	79	12	80	1	80	48	81	32	82	13	82	50	2	83
	32	77	48	78	37	79	23	80	7	80	49	81	26	81	59	8	82
	28	77	13	77	59	78	43	79	24	80	2	80	37	81	7	5	81
	24	76	34	77	18	78	0	78	38	79	14	79	46	80	13	9	80
	20	75	53	76	35	77	14	77	51	78	24	78	54	79	19	3	79
	16	75	10	75	50	76	27	77	1	77	32	78	0	78	23	9	78
	12	74	25	75	3	76	38	77	10	76	40	77	6	77	27	8	77
	8	73	39	74	15	74	48	75	19	75	46	76	10	76	31	2	76
	4	72	51	73	25	73	57	74	26	74	52	75	15	75	34	3	75
23	0	72	2	72	34	73	5	73	32	73	57	74	18	74	37	1	74
22	56	71	12	71	43	72	12	72	38	73	2	73	22	73	39	6	73
	52	70	21	70	51	71	18	71	43	72	6	72	25	72	42	0	72
	48	69	29	69	58	70	24	70	48	71	9	71	28	71	44	1	71
	44	68	36	69	4	69	29	69	52	70	13	70	31	70	46	2	70
	40	67	43	68	10	68	34	68	56	69	16	69	33	69	48	0	69
	36	66	50	67	15	67	39	68	0	68	19	68	35	68	49	8	69
	32	65	56	66	20	66	43	67	3	67	22	67	37	67	51	3	68
	28	65	1	65	25	66	47	66	7	66	24	66	39	66	52	9	67
	24	64	6	64	29	64	50	65	10	65	26	65	41	65	54	4	66
	20	63	11	63	33	63	54	64	12	64	29	64	43	64	55	8	65
	16	62	16	62	37	62	57	63	15	63	31	63	45	63	57	2	64
	12	61	20	61	41	61	0	62	17	62	33	62	46	62	58	5	63
	8	60	24	60	44	61	3	61	20	61	35	61	48	61	59	8	62
	4	59	28	59	47	60	5	60	22	60	37	60	49	60	61	1	61
22	0	58	31	58	50	59	8	59	24	59	38	59	51	60	2	1	60
21	56	57	34	57	53	58	10	58	26	58	40	58	52	59	3	3	59
	52	56	38	56	56	57	12	57	28	57	41	57	54	58	4	4	58
	48	55	41	55	58	56	15	56	30	56	43	56	55	57	5	5	57
	44	54	43	55	1	55	17	55	31	55	44	55	56	56	6	6	56
	40	53	46	54	3	54	19	54	33	54	46	54	57	55	7	7	55
	36	52	49	51	5	53	21	53	35	53	47	53	58	54	8	8	54
	32	51	51	52	7	52	22	52	36	52	49	53	0	53	9	8	53
	28	50	54	51	9	51	24	51	38	51	51	50	4	52	1	2	52
	24	49	56	50	11	50	26	50	39	50	51	6	51	2	4	51	1
	20	48	58	49	13	49	27	49	40	49	52	8	50	3	3	50	2
	16	48	0	48	15	48	29	48	42	48	53	9	49	4	4	49	3
	12	47	2	47	17	47	31	47	43	47	55	1	48	5	4	48	4
	8	46	4	46	19	46	32	46	44	46	56	2	47	6	4	47	5
	4	45	6	45	20	45	33	45	46	45	57	4	46	7	4	46	6
21	0	44	8	44	22	44	35	44	47	44	58	5	45	8	5	45	7

The thin horizontal line indicates the passage over the Prime Vertical.

LATITUDE 10°.																	
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.			
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°				
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	87	0	86	0	85	0	84	0	83	0	82	0	81	0	0	0
23	56	86	50	85	52	84	54	83	55	82	56	81	56	80	56	79	57
	52	86	25	85	32	84	38	83	41	82	44	81	46	80	47	78	49
	48	85	48	85	2	84	12	83	19	82	25	81	29	80	32	77	39
	44	85	3	84	24	83	39	82	50	81	59	81	6	80	12	79	16
	40	84	15	83	40	83	0	82	16	81	28	80	38	79	47	78	54
	36	83	24	82	53	82	17	81	37	80	53	80	6	79	17	78	26
	32	82	30	82	4	81	31	80	55	80	14	79	30	78	44	77	56
	28	81	36	81	12	80	43	80	9	79	32	78	51	78	8	77	22
	24	80	41	80	19	79	53	79	22	78	47	78	9	77	29	76	45
	20	79	45	79	25	78	59	78	1	77	53	77	25	76	47	76	6
	16	78	48	78	31	78	9	77	43	77	13	76	40	76	4	75	25
	12	77	52	77	36	77	15	76	51	76	24	75	52	75	19	74	42
	8	76	54	76	40	76	21	75	59	75	33	75	4	74	32	73	58
	4	75	57	75	44	75	27	75	6	74	42	74	14	73	45	73	12
23	0	75	0	74	47	74	32	74	12	73	50	73	24	72	56	72	25
22	56	74	2	73	51	73	36	73	18	72	57	72	33	72	6	71	36
	52	73	4	72	54	72	40	72	23	72	3	71	41	71	16	70	47
	48	72	6	71	57	71	44	71	28	71	10	70	48	70	24	69	58
	44	71	8	70	59	70	47	70	33	70	15	69	55	69	32	69	7
	40	70	10	70	2	69	51	69	37	69	21	69	1	68	40	68	16
	36	69	12	69	5	68	54	68	41	68	26	68	7	67	48	67	25
	32	68	14	68	7	67	57	67	45	67	30	67	13	66	54	66	33
	28	67	16	67	9	67	0	66	49	66	35	66	19	66	1	65	40
	24	66	18	66	11	66	3	65	52	65	39	65	24	65	7	64	47
	20	65	19	65	14	65	6	64	56	64	43	64	29	64	13	63	54
	16	64	21	64	16	64	8	63	59	63	47	63	34	63	18	63	1
	12	63	23	63	18	63	11	63	2	62	51	62	38	62	24	62	7
	8	62	24	62	20	62	13	62	5	61	55	61	43	61	29	61	13
	4	61	26	61	22	61	16	61	8	60	58	60	47	60	34	60	19
22	0	60	27	60	24	60	18	60	11	60	2	59	51	59	39	59	24
21	56	59	29	59	26	59	21	59	14	59	5	58	55	58	43	58	29
	52	58	31	58	28	58	23	58	17	58	9	57	59	57	48	57	35
	48	57	32	57	30	57	25	57	19	57	12	57	3	56	52	56	40
	44	56	34	56	31	56	27	56	22	56	15	56	6	55	56	8	55
	40	55	35	55	33	55	30	55	25	55	18	55	10	55	0	54	49
	36	54	37	54	35	54	32	54	27	54	21	54	13	54	5	53	54
	32	53	38	53	37	53	34	53	30	53	24	53	17	53	9	52	59
	28	52	40	52	39	52	36	52	32	52	27	52	20	52	12	52	8
	24	51	42	51	41	51	38	51	35	51	30	51	24	51	16	51	7
	20	50	43	50	42	50	40	50	37	50	33	50	27	50	20	50	12
	16	49	45	49	44	49	42	49	40	49	36	49	30	49	24	49	16
	12	48	46	48	46	48	45	48	42	48	38	48	33	48	27	48	20
	8	47	48	47	48	47	47	47	44	47	41	47	36	47	31	47	24
	4	46	49	47	46	50	46	49	46	47	43	46	44	46	40	46	34
21	0	45	51	45	51	45	51	45	49	45	47	45	43	45	38	45	32

LATITUDE 10°.																													
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.														Westerly Hour Angle.													
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°															
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.										
21	0	44	8.2	44	22.2	44	35.2	44	47.4	44	58.5	45	8.5	45	17.4	45	25.5	45	32.5	45	38.4	45	43.3	45	47.0	45	49.6	3	0
20	56	43	9.9	43	23.7	43	36.6	43	48.6	43	59.5	44	9.4	44	18.4	44	26.3	44	33.4	44	39.4	44	44.3	44	48.2	44	51.0	4	
	52	42	11.6	42	25.2	42	37.9	42	49.7	43	0.6	43	10.5	43	19.3	43	27.3	43	34.3	43	40.3	43	45.4	43	49.3	43	52.3	8	
	48	41	13.3	41	26.7	41	39.1	41	50.8	42	1.7	42	11.4	42	20.3	42	28.2	42	35.3	42	41.3	42	46.4	42	50.5	42	53.7	12	
	44	40	14.9	40	28.1	40	40.4	40	52.0	41	2.6	41	12.4	41	21.2	41	29.1	41	36.2	41	42.4	41	47.5	41	51.8	41	55.0	16	
	40	39	16.4	39	29.5	39	41.7	39	53.1	40	3.6	40	13.3	40	22.1	40	30.0	40	37.2	40	43.3	40	48.7	40	53.0	40	56.5	20	
	36	38	17.9	38	30.8	38	42.9	38	54.2	39	4.6	39	14.2	39	23.0	39	30.9	39	38.1	39	44.4	39	49.7	39	54.3	39	57.8	24	
	32	37	19.4	37	32.1	37	44.0	37	55.2	38	5.6	38	15.2	38	23.9	38	31.8	38	39.1	38	45.4	38	50.9	38	55.5	38	59.3	28	
	28	36	20.8	36	33.4	36	45.1	36	56.2	37	6.6	37	16.1	37	24.8	37	32.8	37	40.0	37	46.4	37	52.0	37	56.8	37	60.6	32	
	24	35	22.2	35	34.6	35	46.3	35	57.3	36	7.5	36	17.0	36	25.8	36	33.7	36	41.0	36	47.4	36	53.2	36	58.0	36	61.8	36	
	20	34	23.5	34	35.8	34	47.4	34	58.3	35	8.5	35	18.0	35	26.7	35	34.6	35	42.0	35	48.5	35	54.2	35	59.3	35	63.5	40	
	16	33	24.9	33	37.0	33	48.5	33	59.3	34	9.5	34	18.8	34	27.6	34	35.6	34	43.0	34	49.5	34	55.4	34	60.6	34	65.0	44	
	12	32	26.2	32	38.2	32	49.5	32	60.3	33	0.4	33	10.4	33	19.3	33	28.4	33	36.5	33	43.9	33	50.6	33	56.6	33	61.8	48	
	8	31	27.5	31	39.3	31	50.6	32	1.3	32	11.4	32	20.7	32	29.4	32	37.4	32	44.9	32	51.7	32	57.8	33	3.2	33	7.8	52	
	4	30	28.7	30	40.5	30	51.6	31	2.3	31	12.3	31	21.6	31	30.3	31	38.4	31	46.0	31	52.8	31	59.0	32	4.5	32	9.3	3 56	
20	0	29	29.9	29	41.5	29	52.7	30	3.2	30	13.2	30	22.5	30	31.2	30	39.4	30	47.0	30	53.9	31	0.2	31	5.8	31	10.8	4	0
19	56	28	31.1	28	42.7	28	53.6	29	4.2	29	14.1	29	23.4	29	32.2	29	40.3	29	48.0	29	55.0	30	1.4	30	7.2	30	12.4	4	
	52	27	32.3	27	43.7	27	54.7	28	5.1	28	15.0	28	24.3	28	33.1	28	41.3	28	49.0	28	56.1	29	2.6	29	8.2	29	13.8	8	
	48	26	33.4	26	44.9	26	55.6	27	6.1	27	16.0	27	25.2	27	34.0	27	42.2	27	50.0	27	57.2	28	3.9	28	9.9	28	15.4	12	
	44	25	34.6	25	46.1	25	56.7	26	7.0	26	16.9	26	26.1	26	34.9	26	43.2	26	51.1	26	58.4	27	5.1	27	11.3	27	16.9	16	
	40	24	35.7	24	46.9	24	57.6	25	8.0	25	17.8	25	27.1	25	35.9	25	44.2	25	52.2	25	59.5	26	6.3	26	12.7	26	18.5	20	
	36	23	36.8	23	47.9	23	58.6	24	8.9	24	18.7	24	28.0	24	36.9	24	45.2	24	53.2	25	0.7	25	7.6	25	14.0	25	20.0	24	
	32	22	37.9	22	48.9	22	59.5	23	9.8	23	19.6	23	28.9	23	37.8	23	46.3	23	54.3	24	1.8	24	8.9	24	15.5	24	21.6	28	
	28	21	38.9	21	49.9	22	0.5	22	10.7	22	20.5	22	29.8	22	38.7	22	47.2	22	55.4	23	3.0	23	10.2	23	16.9	23	23.2	32	
	24	20	40.0	20	50.9	21	1.4	21	11.7	21	21.4	21	30.8	21	39.7	21	48.3	21	56.5	22	4.2	22	11.5	22	18.4	22	24.9	36	
	20	19	41.0	19	51.9	20	2.4	20	12.6	20	22.3	20	31.7	20	40.7	20	49.3	20	57.6	21	5.4	21	12.9	21	19.9	21	26.5	40	
	16	18	42.0	18	52.8	19	3.3	19	13.5	19	23.3	19	32.6	19	41.6	19	50.3	19	58.7	20	6.7	20	14.2	20	21.4	20	28.1	44	
	12	17	43.0	17	53.8	18	4.2	18	14.4	18	24.2	18	33.6	18	42.6	18	51.4	18	59.9	19	7.9	19	15.6	19	22.9	19	29.9	48	
	8	16	44.0	16	54.7	17	5.1	17	15.3	17	25.1	17	34.5	17	43.6	17	52.5	18	1.0	18	9.2	18	17.0	18	24.4	18	31.5	52	
	4	15	45.0	15	55.7	16	6.1	16	16.2	16	26.0	16	35.5	16	44.7	16	53.6	17	2.2	17	10.4	17	18.4	17	25.9	17	33.3	4 56	
19	0	14	46.0	14	56.6	15	7.0	15	17.1	15	26.9	15	36.5	15	45.7	15	54.6	16	3.4	16	11.7	16	19.8	16	27.5	16	35.0	5	0
18	56	13	47.0	13	57.5	14	7.9	14	18.0	14	27.9	14	37.4	14	46.7	14	55.7	15	4.6	15	13.0	15	21.3	15	29.1	15	36.8	4	
	52	12	48.0	12	58.5	13	8.8	13	19.0	13	28.8	13	38.4	13	47.7	13	56.8	14	5.7	14	14.4	14	22.7	14	30.8	14	38.5	8	
	48	11	48.9	11	59.4	12	9.7	12	19.9	12	29.8	12	39.4	12	48.8	12	57.9	13	8.0	13	15.7	13	24.2	13	32.4	13	40.3	12	
	44	10	49.9	11	0.4	11	10.6	11	20.8	11	30.7	11	40.4	11	49.8	11	59.1	12	8.2	12	17.1	12	25.7	12	34.1	12	42.2	16	
	40	9	50.8	10	1.3	10	11.5	10	21.7	10	31.7	10	41.3	10	50.9	11	0.3	11	9.5	11	18.4	11	27.2	11	35.7	11	44.0	20	
	36	8	51.7	9	2.2	9	12.4	9	22.6	9	32.6	9	42.4	9	52.0	10	1.4	10	10.8	10	19.8	10	28.8	10	37.4	10	45.9	24	
	32	7	52.6	8	3.1	8	13.4	8	23.5	8	33.6	8	43.4	8	53.1	9	2.6	9	12.0	9	21.3	9	30.3	9	39.1	9	47.8	28	
	28	6	53.6	7	4.0	7	14.3	7	24.5	7	34.6	7	44.4	7	54.2	8	3.8	8	13.4	8	22.7	8	31.9	8	40.9	8	49.8	32	
	24	5	54.5	6	4.9	6	15.2	6	25.5	6	35.6	6	45.5	6	55.3	7	5.0	7	14.7	7	24.2	7	33.5	7	42.7	7	51.7	36	
	20	4	55.5	5	5.8	5	16.1	5	26.4	5	36.5	5	46.6	5	56.4	6	6.2	6	16.0	6	25.6	6	35.1	6	44.4	6	53.7	40	
	16	3	56.4	4	6.7	4	17.1	4	27.3	4	37.6	4	47.6	4	57.6	5	7.5	5	17.4	5	27.1	5	36.8	5	46.3	5	55.7	44	
	12	2	57.3	3	7.7	3	18.0	3	28.3	3	38.6	3	48.7	3	58.8	4	8.8	4	18.8	4	28.7	4	38.5	4	48.1	4	57.7	48	
	8	1	58.1	2	8.6	2	18.9	2	29.3	2	39.6	2	49.8	2	59.9	3	10.1	3	20.2	3	30.2	3	40.2	3	50.0	3	59.8	52	
	4	0	59.1	1	9.5	1	19.9	1	30.3	1	40.6	1	50.9	2	1.2	2	11.4	2	21.6	2	31.8	2	41.9	2	51.9	3	1.9	5 56	
18	0	0	0.0	0	10.4	0	20.8	0	31.2	0	41.7	0	52.0	1	2.4	1	12.7	1	23.1	1	33.4	1	43.7	1	53.9	2	4.1	6	0

LATITUDE 10°.													
Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
21 0	45 51.3	45 51.8	45 51.3	45 49.7	45 47.0	45 43.2	45 38.5	45 32.5	45 25.5	45 17.6	45 8.5	44 58.5	3 0
20 56	44 52.8	44 53.7	44 53.3	44 52.0	44 49.7	44 46.2	44 41.9	44 36.4	44 30.0	44 22.4	44 14.0	44 4.5	4
52	43 54.4	43 55.4	43 55.4	43 54.4	43 52.4	43 49.3	43 45.4	43 40.3	43 34.3	43 27.3	43 19.3	43 10.4	8
48	42 55.9	42 57.2	42 57.4	42 56.8	42 55.0	42 52.3	42 48.8	42 44.1	42 38.6	42 32.1	42 24.6	42 16.2	12
44	41 57.5	41 58.9	41 59.5	41 59.0	41 57.7	41 55.4	41 52.2	41 47.9	41 42.8	41 36.8	41 29.8	41 22.0	16
40	40 59.0	41 0.7	41 1.5	41 1.4	41 0.4	40 58.4	40 55.6	40 51.7	40 47.0	40 41.4	40 35.0	40 27.7	20
36	40 0.6	40 2.5	40 3.5	40 3.7	40 3.0	40 1.3	39 58.9	39 55.5	39 51.2	39 46.1	39 40.1	39 33.3	24
32	39 2.1	39 4.3	39 5.6	39 6.0	39 5.6	39 4.3	39 2.3	38 59.2	38 55.4	38 50.6	38 45.2	38 38.8	28
28	38 3.8	38 6.1	38 7.6	38 8.3	38 8.2	38 7.3	38 5.6	38 2.9	37 59.5	37 55.2	37 50.1	37 44.4	32
24	37 5.4	37 8.0	37 9.6	37 10.7	37 10.8	37 10.1	37 8.9	37 6.6	37 3.6	36 59.8	36 55.2	36 49.8	36
20	36 7.0	36 9.8	36 11.8	36 13.0	36 13.5	36 13.1	36 12.1	36 10.2	36 7.6	36 4.2	36 0.1	35 55.3	40
16	35 8.6	35 11.6	35 13.8	35 15.4	35 16.1	35 16.0	35 15.4	35 13.8	35 11.7	35 8.7	35 5.0	35 0.7	44
12	34 10.3	34 13.4	34 15.9	34 17.7	34 18.7	34 18.9	34 18.7	34 17.5	34 15.6	34 13.2	34 9.9	34 6.0	48
8	33 11.9	33 15.3	33 18.0	33 20.0	33 21.3	33 21.9	33 21.3	33 19.7	33 17.6	33 14.8	33 11.3		52
4	32 13.6	32 17.2	32 20.1	32 22.3	32 24.0	32 24.8	32 25.2	32 24.7	32 23.7	32 22.0	32 19.6	32 16.6	3 56
20 0	31 15.3	31 19.0	31 22.2	31 24.7	31 26.6	31 27.8	31 28.5	31 28.4	31 27.7	31 26.4	31 24.4	31 21.8	4 0
19 56	30 16.9	30 20.9	30 24.3	30 27.0	30 29.2	30 30.7	30 31.8	30 32.0	30 31.7	30 30.7	30 29.2	30 27.1	4
52	29 18.6	29 22.8	29 26.4	29 29.4	29 31.9	29 33.7	29 35.0	29 35.6	29 35.7	29 35.1	29 33.9	29 32.3	8
48	28 20.3	28 24.7	28 28.5	28 31.8	28 34.6	28 36.7	28 38.4	28 39.2	28 39.7	28 39.5	28 38.8	28 37.5	12
44	27 22.0	27 26.6	27 30.7	27 34.3	27 37.3	27 39.6	27 41.6	27 42.9	27 43.6	27 43.9	27 43.6	27 42.8	16
40	26 23.8	26 28.6	26 32.9	26 36.7	26 39.9	26 42.6	26 44.9	26 46.5	26 47.7	26 48.2	26 48.4	26 47.9	20
36	25 25.5	25 30.6	25 35.1	25 39.1	25 42.7	25 45.6	25 48.2	25 50.1	25 51.6	25 52.7	25 53.1	25 53.1	24
32	24 27.3	24 32.5	24 37.3	24 41.6	24 45.3	24 48.6	24 51.5	24 53.8	24 55.7	24 57.0	24 57.9	24 58.3	28
28	23 29.1	23 34.5	23 39.5	23 44.0	23 48.1	23 51.6	23 54.9	23 57.5	23 59.6	24 1.4	24 2.6	24 3.5	32
24	22 30.9	22 36.5	22 41.7	22 46.5	22 50.9	22 54.7	22 58.2	23 1.1	23 3.7	23 5.8	23 7.4	23 8.7	36
20	21 32.7	21 38.5	21 43.9	21 49.0	21 53.6	21 57.7	22 1.5	22 4.8	22 7.7	22 10.2	22 12.2	22 13.9	40
16	20 34.6	20 40.6	20 46.2	20 51.5	20 56.4	21 0.8	21 5.0	21 8.5	21 11.7	21 14.6	21 17.0	21 19.1	44
12	19 36.4	19 42.7	19 48.5	19 54.0	19 59.2	20 3.9	20 8.3	20 12.2	20 15.8	20 19.0	20 21.9	20 24.3	48
8	18 38.4	18 44.8	18 50.8	18 56.6	19 2.0	19 7.0	19 11.7	19 16.0	19 19.9	19 23.5	19 26.7	19 29.5	52
4	17 40.2	17 46.9	17 53.2	17 59.2	18 4.9	18 10.1	18 15.2	18 19.7	18 24.0	18 28.0	18 31.5	18 34.8	4 56
19 0	16 42.2	16 49.0	16 55.6	17 1.8	17 7.7	17 13.2	17 18.6	17 23.5	17 28.2	17 32.4	17 36.4	17 40.0	5 0
18 56	15 44.1	15 51.2	15 57.9	16 4.4	16 10.6	16 16.4	16 22.1	16 27.3	16 32.3	16 37.0	16 41.3	16 45.3	4
52	14 46.1	14 53.4	15 0.3	15 7.1	15 13.6	15 19.7	15 25.6	15 31.1	15 36.4	15 41.5	15 46.2	15 50.7	8
48	13 48.1	13 55.6	14 2.8	14 9.8	14 16.5	14 22.9	14 29.2	14 35.0	14 40.7	14 46.0	14 51.1	14 56.0	12
44	12 50.1	12 57.8	13 5.3	13 12.5	13 19.5	13 26.2	13 32.8	13 38.9	13 44.9	13 50.6	13 56.1	14 1.4	16
40	11 52.2	12 0.1	12 7.7	12 15.3	12 22.5	12 29.5	12 36.3	12 42.9	12 49.2	12 55.2	13 1.1	13 6.7	20
36	10 54.2	11 2.4	11 10.3	11 18.0	11 25.6	11 32.8	11 40.0	11 46.8	11 53.5	11 59.9	12 6.1	12 12.2	24
32	9 56.3	10 4.7	10 12.8	10 20.8	10 28.6	10 36.2	10 43.7	10 50.8	10 57.8	11 4.7	11 11.2	11 17.7	28
28	8 58.5	9 7.0	9 15.4	9 23.7	9 31.7	9 39.5	9 47.4	9 54.8	10 2.2	10 9.4	10 16.4	10 23.1	32
24	8 0.6	8 9.4	8 18.0	8 26.5	8 34.9	8 43.0	8 51.1	8 58.9	9 6.6	9 14.1	9 21.5	9 28.7	36
20	7 2.8	7 11.8	7 20.6	7 29.5	7 38.1	7 46.5	7 54.9	8 3.0	8 11.1	8 18.9	8 26.7	8 34.3	40
16	6 5.1	6 14.2	6 23.4	6 32.4	6 41.3	6 50.0	6 58.8	7 7.2	7 15.5	7 23.9	7 31.9	7 40.0	44
12	5 7.3	5 16.8	5 26.1	5 35.4	5 44.6	5 53.6	6 2.6	6 11.4	6 20.1	6 28.7	6 37.3	6 45.6	48
8	4 9.6	4 19.3	4 28.9	4 38.4	4 47.9	4 57.2	5 6.5	5 15.7	5 24.7	5 33.7	5 42.6	5 51.4	52
4	3 11.9	3 21.9	3 31.7	3 41.5	3 51.2	4 0.8	4 10.5	4 19.9	4 29.4	4 38.7	4 48.0	4 57.2	5 56
18 0	2 14.3	2 24.5	2 34.5	2 44.6	2 54.6	3 4.5	3 14.5	3 24.3	3 34.1	3 43.8	3 53.4	4 3.0	6 0

LATITUDE 10°.															
Westerly		DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly	
Hour Angle.		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Hour Angle.	
h. m.	° ' °														

TRUE ALTITUDE OF BODY.

LATITUDE 10°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
		Declination															
Declination		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
Same Name.	Contrary Name.																
h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.	h. m.	
15 0	21 0	44 8.2	43 53.2	43 37.2	43 20.4	43 2.7	42 44.0	42 24.4	42 4.0	41 42.9	41 20.9	40 58.1	40 34.4	40 10.1	3 0	9 0	
4	20 56	43 9.9	42 55.2	42 39.5	42 23.0	42 5.6	41 47.3	41 28.1	41 8.0	40 47.4	40 25.8	40 3.4	39 40.4	39 16.5	4	8 56	
8	52	42 11.6	41 57.1	41 41.7	41 25.5	41 8.4	40 50.5	40 31.6	40 12.0	39 51.7	39 30.5	39 8.7	38 46.0	38 22.6	8	52	
12	48	41 13.3	40 59.0	40 43.8	40 27.8	40 11.2	39 53.5	39 35.0	39 15.7	38 55.9	38 35.1	38 13.7	37 51.5	37 28.7	12	48	
16	44	40 14.9	40 0.8	39 45.9	39 30.2	39 13.7	38 56.4	38 38.2	38 19.4	37 59.9	37 39.6	37 18.5	36 56.9	36 34.4	16	44	
20	40	39 16.4	39 2.6	38 47.9	38 32.4	38 16.3	37 59.2	37 41.4	37 22.9	37 3.8	36 43.9	36 23.3	36 1.9	35 40.0	20	40	
24	36	38 17.9	38 4.3	37 49.8	37 34.6	37 18.7	37 1.9	36 44.5	36 26.3	36 7.5	35 48.1	35 27.8	35 7.0	34 45.4	24	36	
28	32	37 19.4	37 5.9	36 51.6	36 36.7	36 21.0	36 4.6	35 47.4	35 29.6	35 11.3	34 52.0	34 32.3	34 11.7	33 50.7	28	32	
32	28	36 20.8	36 7.5	35 53.4	35 38.7	35 23.4	35 7.2	34 50.3	34 32.8	34 14.7	33 56.0	33 36.5	33 16.5	32 55.7	32	28	
36	24	35 22.2	35 9.1	34 55.2	34 40.7	34 25.6	34 9.7	33 53.1	33 35.9	33 18.2	32 59.7	32 40.7	32 20.9	32 0.7	36	24	
40	20	34 23.5	34 10.6	33 56.9	33 42.6	33 27.7	33 12.1	32 55.8	32 38.9	32 21.4	32 3.4	31 44.6	31 25.4	31 5.5	40	20	
44	16	33 24.9	33 12.1	32 58.6	32 44.5	32 29.9	32 14.4	31 58.4	31 41.8	31 24.7	31 6.9	30 48.5	30 29.6	30 10.1	44	16	
48	12	32 26.2	32 13.5	32 0.2	31 46.4	31 31.9	31 16.7	31 0.9	30 44.6	30 27.8	30 10.3	29 52.3	29 33.7	29 14.6	48	12	
52	8	31 27.5	31 14.9	31 1.8	30 48.1	30 33.8	30 18.9	30 3.4	29 47.3	29 30.8	29 13.7	28 56.0	28 37.8	28 19.0	52	8	
15 56	4	30 28.7	30 16.3	30 3.3	29 49.8	29 35.7	29 21.1	29 5.7	28 50.0	28 33.8	28 16.9	27 59.6	27 41.6	27 23.3	3 56	4	
16 0	20 0	29 29.9	29 17.6	29 4.8	28 51.4	28 37.6	28 23.1	28 8.1	27 52.6	27 36.6	27 20.1	27 3.0	26 45.5	26 27.4	4 0	8 0	
4	19 56	28 31.1	28 19.0	28 6.2	27 53.1	27 39.4	27 25.1	27 10.3	26 55.1	26 39.4	26 23.1	26 6.4	25 49.1	25 31.5	4	7 56	
8	52	27 32.3	27 20.2	27 7.8	26 54.6	26 41.2	26 27.1	26 12.5	25 57.5	25 42.1	25 26.1	25 9.7	24 52.8	24 35.4	8	52	
12	48	26 33.4	26 21.6	26 9.1	25 56.3	25 42.9	25 29.0	25 14.7	24 59.8	24 44.7	24 29.0	24 12.9	23 56.3	23 39.2	12	48	
16	44	25 34.6	25 22.7	25 10.5	24 57.8	24 44.7	24 30.9	24 16.7	24 2.2	23 47.2	23 31.8	23 16.0	22 59.7	22 42.9	16	44	
20	40	24 35.7	24 24.0	24 11.8	23 59.3	23 46.3	23 32.8	22 18.8	22 4.4	22 49.8	22 34.5	22 19.0	22 3.0	21 46.6	20	40	
24	36	23 36.8	23 25.2	23 13.2	23 0.7	22 47.9	22 34.5	22 20.8	22 6.6	21 52.2	21 37.2	21 21.9	21 6.2	20 50.1	24	36	
28	32	22 37.9	22 26.4	22 14.4	22 2.1	21 49.4	21 36.3	21 22.7	21 8.8	20 54.5	20 39.9	20 24.8	20 9.3	19 53.6	28	32	
32	28	21 38.9	21 27.5	21 15.7	21 3.5	20 51.0	20 38.0	20 24.6	20 10.8	19 56.9	19 42.4	19 27.6	19 12.5	18 57.0	32	28	
36	24	20 40.0	20 28.7	20 16.9	20 4.9	19 52.5	19 39.6	19 26.4	19 12.9	18 59.1	18 44.9	18 30.3	18 15.5	18 0.3	36	24	
40	20	19 41.0	19 29.8	19 18.1	19 6.2	18 53.9	18 41.2	18 28.2	18 14.8	18 1.3	17 47.3	17 33.1	17 18.4	17 3.5	40	20	
44	16	18 42.0	18 30.9	18 19.3	18 7.5	17 55.4	17 42.9	17 29.9	17 16.8	17 3.4	16 49.8	16 35.7	16 21.4	16 6.6	44	16	
48	12	17 43.0	17 32.0	17 20.5	17 8.8	16 56.8	16 44.4	16 31.7	16 18.7	16 5.6	15 52.0	15 38.2	15 24.1	15 9.8	48	12	
52	8	16 44.0	16 33.0	16 21.6	16 10.0	15 58.1	15 45.9	15 33.4	15 20.6	15 7.6	14 54.3	14 40.7	14 26.9	14 12.7	52	8	
16 56	4	15 45.0	15 34.1	15 22.8	15 11.3	14 59.5	14 47.4	14 35.1	14 22.4	14 9.7	13 56.5	13 43.2	13 29.5	13 15.7	4 56	4	
17 0	19 0	14 46.0	14 35.1	14 23.9	14 12.4	14 0.8	13 48.9	13 36.7	13 24.2	13 11.6	12 58.7	12 45.5	12 32.2	12 18.6	5 0	7 0	
4	18 56	13 47.0	13 36.1	13 25.0	13 13.7	13 2.2	12 50.3	12 38.2	12 26.0	12 13.6	12 0.8	11 47.9	11 34.7	11 21.5	4	6 56	
8	52	12 48.0	12 37.1	12 26.1	12 14.9	12 3.5	11 51.7	11 39.8	11 27.7	11 15.4	11 2.9	10 50.2	10 37.3	10 24.1	8	52	
12	48	11 48.9	11 38.1	11 27.2	11 16.0	11 4.7	10 53.1	10 41.3	10 29.3	10 17.3	10 5.0	9 52.5	9 39.8	9 26.9	12	48	
16	44	10 49.9	10 39.1	10 28.2	10 17.2	10 5.9	9 54.5	9 42.8	9 31.0	9 19.1	9 7.0	8 54.7	8 42.2	8 29.6	16	44	
20	40	9 50.8	9 40.1	9 29.2	9 18.3	9 7.2	8 55.8	8 44.3	8 32.6	8 20.9	8 8.9	7 56.8	7 44.6	7 32.2	20	40	
24	36	8 51.7	8 41.1	8 30.3	8 19.4	8 8.3	7 57.1	7 45.7	7 34.2	7 22.6	7 10.8	6 59.0	6 46.9	6 34.7	24	36	
28	32	7 52.6	7 42.1	7 31.3	7 20.4	7 9.5	6 58.4	6 47.1	6 35.7	6 24.3	6 12.8	6 1.0	5 49.2	5 37.2	28	32	
32	28	6 53.6	6 43.0	6 32.3	6 21.6	6 10.7	5 59.7	5 48.5	5 37.2	5 26.0	5 14.5	5 3.1	4 51.4	4 39.7	32	28	
36	24	5 54.5	5 44.0	5 33.3	5 22.6	5 11.9	5 0.9	4 49.8	4 38.7	4 27.6	4 16.4	4 5.1	3 53.7	3 42.1	36	24	
40	20	4 55.5	4 44.9	4 34.3	4 23.7	4 13.0	4 2.1	3 51.2	3 40.2	3 29.2	3 18.2	3 7.0	2 55.8	2 44.5	40	20	
44	16	3 56.4	3 45.9	3 35.3	3 24.7	3 14.1	3 3.4	2 52.5	2 41.6	2 30.8	2 19.9	2 8.9	1 57.9	1 46.8	44	16	
48	12	2 57.3	2 46.8	2 36.2	2 25.7	2 15.2	2 4.5	1 53.8	1 43.1	1 32.4	1 21.6	1 10.8	1 0.0	0 49.1	48	12	
52	8	1 58.1	1 47.7	1 37.2	1 26.7	1 16.3	1 5.7	0 55.1	0 44.5	0 34.0	0 23.3	0 12.7	0 2.0	0 8.6	52	8	
17 56	4	0 59.1	0 48.7	0 38.2	0 27.7	0 17.3	0 6.8	0 3.7	0 14.2	0 24.5	0 35.0	0 45.5	0 56.0	1 6.4	5 56	4	
18 0	18 0	0 0.0	0 10.4	0 20.8	0 31.2	0 41.7	0 52.0	1 2.4	1 12.7	1 23.1	1 33.4	1 43.7	1 53.9	2 4.1	6 0	6 0	

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The heavy zigzag line is the horizon line and separates

The heavy zigzag line is the horizon line and separates contrary names from same names.

LATITUDE 10°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.			
Declination														Declination			
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.		
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.		
15 0	21 0	39 45.0	39 19.3	38 52.8	38 25.6	37 57.8	37 29.4	37 0.4	36 30.6	36 0.4	35 29.6	34 58.3	34 26.4	3 0	9 0		
4	20 56	38 51.9	38 26.8	38 0.8	37 34.2	37 7.0	36 39.1	36 10.7	35 41.7	35 12.0	34 41.8	34 11.1	33 39.9	4	8 56		
8	52	37 58.7	37 34.0	37 8.6	36 42.5	36 15.9	35 48.6	35 20.8	34 52.3	34 23.3	33 53.7	33 23.6	32 53.1	8	52		
12	48	37 5.1	36 41.0	36 16.1	35 50.6	35 24.5	34 57.8	34 30.6	34 2.6	33 34.3	33 5.3	32 35.8	32 5.9	12	48		
16	44	36 11.3	35 47.7	35 23.4	34 58.4	34 32.9	34 6.7	33 40.0	33 12.7	32 44.9	32 16.6	31 47.7	31 18.4	16	44		
20	40	35 17.4	34 54.3	34 30.4	34 6.0	33 41.0	33 15.4	32 49.3	32 22.5	31 55.3	31 27.5	30 59.3	30 30.5	20	40		
24	36	34 23.3	34 0.6	33 37.2	33 13.3	32 48.9	32 23.7	31 58.2	31 32.0	31 5.8	30 38.2	30 10.5	29 42.4	24	36		
28	32	33 28.9	33 6.8	32 43.9	32 20.4	31 56.5	31 31.9	31 6.9	30 41.3	30 15.2	29 48.5	29 21.5	28 53.9	28	32		
32	28	32 34.5	32 12.7	31 50.3	31 27.3	31 3.9	30 39.9	30 15.4	29 50.3	29 24.7	28 58.7	28 32.1	28 5.2	32	28		
36	24	31 39.9	31 18.6	30 56.5	30 34.1	30 11.1	29 47.5	29 23.6	28 59.0	28 34.0	28 8.5	27 42.6	27 16.2	36	24		
40	20	30 45.1	30 24.1	30 2.6	29 40.6	29 18.1	28 55.0	28 31.6	28 7.6	27 43.1	27 18.1	26 52.7	26 27.0	40	20		
44	16	29 50.0	29 29.7	29 8.6	28 47.0	28 24.9	28 2.3	27 39.4	27 15.8	26 51.9	26 27.5	26 2.7	25 37.5	44	16		
48	12	28 55.0	28 34.9	28 14.3	27 53.2	27 31.6	27 9.4	26 47.0	26 23.9	26 0.5	25 36.7	25 12.4	24 47.7	48	12		
52	8	27 59.8	27 40.1	27 19.9	26 59.2	26 38.0	26 16.4	25 54.4	25 31.9	25 8.9	24 45.6	24 21.9	23 57.8	52	8		
15 56	4	27 4.4	26 45.2	26 25.3	26 5.0	25 44.4	25 23.1	25 1.7	24 39.6	24 17.2	23 54.3	23 31.1	23 7.5	3 56	4		
16 0	20 0	26 9.0	25 50.0	25 30.6	25 10.8	24 50.5	24 29.8	24 8.7	23 47.2	23 25.2	23 2.9	22 40.2	22 17.1	4 0	8 0		
4	19 56	25 13.3	24 54.8	24 35.8	24 16.3	23 56.5	23 36.2	23 15.7	22 54.5	22 33.1	22 11.2	21 49.0	21 26.4	4	7 56		
8	52	24 17.6	23 59.5	23 40.8	23 21.7	23 2.3	22 42.5	22 22.4	22 1.7	21 40.7	21 19.4	20 57.6	20 35.7	8	52		
12	48	23 21.8	23 4.0	22 45.7	22 27.1	22 8.1	21 48.6	21 29.0	21 8.7	20 48.2	20 27.3	20 6.2	19 44.6	12	48		
16	44	22 25.8	22 8.4	21 50.5	21 32.3	21 13.7	20 54.6	20 35.4	20 15.6	19 55.5	19 35.2	19 14.5	18 53.5	16	44		
20	40	21 29.8	21 12.7	20 55.2	20 37.4	20 19.1	20 0.5	19 41.6	19 22.3	19 2.8	18 42.8	18 22.6	18 2.1	20	40		
24	36	20 33.7	20 17.0	19 59.8	19 42.3	19 24.5	19 6.2	18 47.8	18 28.9	18 9.8	17 50.4	17 30.5	17 10.6	24	36		
28	32	19 37.5	19 21.1	19 4.3	18 47.1	18 29.7	18 11.9	17 53.8	17 35.4	17 16.7	16 57.7	16 38.4	16 18.9	28	32		
32	28	18 41.2	18 25.1	18 8.6	17 51.9	17 34.7	17 17.3	16 59.7	16 41.7	16 23.4	16 4.9	15 46.1	15 27.0	32	28		
36	24	17 44.7	17 29.0	17 12.9	16 56.4	16 39.8	16 22.7	16 5.5	15 47.9	15 30.0	15 12.0	14 53.6	14 35.0	36	24		
40	20	16 48.3	16 32.8	16 17.0	16 1.0	15 44.6	15 28.0	15 11.1	14 54.0	14 36.6	14 18.9	14 1.0	13 42.9	40	20		
44	16	15 51.7	15 36.6	15 21.1	15 5.4	14 49.4	14 33.1	14 16.7	13 59.9	13 42.9	13 25.7	13 8.2	12 50.6	44	16		
48	12	14 55.1	14 40.3	14 25.1	14 9.7	13 54.1	13 38.2	13 22.2	13 5.7	12 49.2	12 32.4	12 15.4	11 58.2	48	12		
52	8	13 58.4	13 43.9	13 29.0	13 13.9	12 58.7	12 43.1	12 27.5	12 11.5	11 55.3	11 39.0	11 22.4	11 5.6	52	8		
16 56	4	13 1.6	12 47.5	12 32.8	12 18.1	12 3.2	11 47.9	11 32.7	11 17.1	11 1.4	10 45.4	10 29.2	10 13.0	4 56	4		
17 0	19 0	12 4.8	11 50.8	11 36.6	11 22.2	11 7.6	10 52.8	10 37.8	10 22.6	10 7.3	9 51.8	9 36.0	9 20.2	5 0	7 0		
4	18 56	11 7.9	10 54.2	10 40.3	10 26.2	10 11.9	9 57.4	9 42.9	9 28.0	9 13.1	8 58.0	8 42.7	8 27.3	4	6 56		
8	52	10 10.9	9 57.5	9 43.9	9 30.1	9 16.2	9 2.0	8 47.8	8 33.4	8 18.8	8 4.1	7 49.2	7 34.3	8	52		
12	48	9 13.9	9 0.8	8 47.4	8 34.0	8 20.4	8 6.6	7 52.7	7 38.6	7 24.4	7 10.1	6 55.7	6 41.2	12	48		
16	44	8 16.8	8 3.9	7 50.9	7 37.8	7 24.5	7 11.0	6 57.5	6 43.8	6 30.0	6 16.1	6 2.0	5 48.0	16	44		
20	40	7 19.7	7 7.1	6 54.3	6 41.5	6 28.5	6 15.3	6 2.2	5 48.9	5 35.4	5 21.9	5 8.3	4 54.6	20	40		
24	36	6 22.5	6 10.2	5 57.7	5 45.1	5 32.5	5 19.6	5 6.8	4 53.9	4 40.9	4 27.7	4 14.5	4 1.3	24	36		
28	32	5 25.2	5 13.2	5 1.0	4 48.7	4 36.3	4 23.9	4 11.4	3 58.8	3 46.1	3 33.4	3 20.6	3 7.8	28	32		
32	28	4 27.9	4 16.1	4 4.2	3 52.2	3 40.2	3 28.0	3 16.0	3 3.6	2 51.3	2 39.0	2 26.6	2 14.1	32	28		
36	24	3 30.6	3 19.1	3 7.4	2 55.7	2 44.0	2 32.1	2 20.3	2 8.4	1 56.5	1 44.5	1 32.5	1 20.6	36	24		
40	20	2 33.2	2 21.9	2 10.5	1 59.1	1 47.7	1 36.1	1 24.7	1 13.1	1 1.6	0 49.9	0 38.4	0 26.8	40	20		
44	16	1 35.8	1 24.7	1 13.6	1 2.5	0 51.3	0 40.1	0 29.0	0 17.8	0 6.5	0 4.6	0 15.9	0 27.0	44	16		
48	12	0 38.3	0 27.5	0 16.6	0 5.8	0 5.1	0 16.0	0 26.7	0 37.7	0 48.5	0 59.4	1 10.1	1 20.9	48	12		
52	8	0 19.2	0 29.8	0 40.4	0 51.0	1 1.5	1 12.1	1 22.6	1 33.1	1 43.6	1 54.1	2 4.5	2 14.9	52	8		
17 56	4	1 16.8	1 27.1	1 37.5	1 47.8	1 58.0	2 8.3	2 18.5	2 28.7	2 38.8	2 48.9	2 58.9	3 8.9	5 56	4		
18 0	18 0	2 14.3	2 24.5	2 34.5	2 44.6	2 54.6	3 4.6	3 14.4	3 24.3	3 34.1	3 43.8	3 53.4	4 3.0	6 0	6 0		

LATITUDE 11°.																																									
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.																											
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°																									
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.																								
24 0	79	0	0	80	0	0	81	0	0	82	0	0	83	0	0	84	0	0	85	0	0	86	0	0	87	0	0	88	0	0	89	0	0	90	0	0	89	0	0	0	
23 56	78	57	4	79	57	0	80	56	7	81	56	3	82	55	8	83	55	1	84	54	2	85	52	8	86	50	5	87	46	3	88	35	9	89	1	1	88	6	0	8	
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44	78	18	2	79	14	6	80	9	7	81	4	1	81	57	3	82	48	7	83	37	4	84	22	7	85	2	6	85	35	0	85	56	5	86	4	4	85	57	3	16	
40	77	55	8	78	50	1	79	43	3	80	35	2	81	25	3	82	13	2	82	58	1	83	38	6	84	13	6	84	41	1	84	58	9	85	5	5	85	0	0	20	
36	77	29	3	78	21	5	79	12	8	80	1	6	80	48	8	81	33	5	82	14	4	82	51	1	83	22	0	83	45	6	84	1	0	84	6	6	84	2	2	24	
32	76	59	1	77	49	2	78	38	1	79	24	5	80	8	6	80	49	9	81	27	6	82	0	7	82	28	3	82	49	3	83	2	7	83	7	7	83	4	1	28	
28	76	25	7	77	13	6	78	0	2	78	44	2	79	25	5	80	3	7	80	38	5	81	8	6	81	33	5	81	52	3	82	4	2	82	8	8	82	5	8	32	
24	75	49	4	76	35	2	77	19	3	78	1	0	78	39	8	79	15	4	79	47	6	80	15	1	80	37	8	80	54	9	81	5	6	81	9	9	81	7	5	36	
20	75	10	5	75	54	4	76	36	4	77	15	6	77	52	3	78	25	5	78	55	3	79	20	8	79	41	6	79	57	1	80	7	0	80	11	1	80	9	0	40	
16	74	29	5	75	11	4	75	51	3	76	28	5	77	2	8	77	34	0	78	1	7	78	25	6	78	44	7	78	59	0	79	8	3	79	12	2	79	10	5	44	
12	73	46	5	74	26	6	75	4	6	75	39	7	76	12	2	76	41	4	77	7	4	77	29	9	77	47	4	78	0	9	78	9	6	78	13	2	78	12	0	48	
8	73	2	0	73	40	2	74	16	3	74	49	7	75	20	6	75	48	1	76	12	4	76	33	4	76	50	0	77	2	8	77	10	8	77	14	2	77	13	3	52	
4	72	15	8	72	52	4	73	26	9	73	58	7	74	27	8	74	54	0	75	16	8	75	36	5	75	52	4	76	4	3	76	12	0	76	15	3	76	14	7	0	56
23 0	71	28	5	72	3	5	72	36	5	73	6	7	73	34	4	73	59	1	74	20	8	74	39	5	74	54	4	75	5	8	75	13	3	75	16	6	75	16	1	1	0
22 56	70	40	0	71	13	5	71	45	0	72	14	0	72	40	3	73	3	8	73	24	6	73	42	3	73	56	4	74	7	0	74	14	3	74	17	7	74	17	6	4	
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44	68	8	9	68	38	6	69	6	4	69	31	9	69	55	1	70	15	6	70	33	6	70	49	2	71	1	6	71	11	3	71	17	8	71	21	1	71	21	4	16	
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36	66	24	6	66	52	2	67	18	1	67	41	6	68	2	9	68	22	0	68	38	7	68	53	2	69	4	6	69	13	7	69	19	9	69	23	4	69	24	2	24	
32	65	31	6	65	58	3	66	23	1	66	45	9	67	6	5	67	24	9	67	41	0	67	54	8	68	6	1	68	14	9	68	21	0	68	24	6	68	25	5	28	
28	64	38	1	65	3	9	65	27	8	65	49	8	66	9	9	66	27	6	66	43	1	66	56	6	67	7	5	67	16	2	67	22	2	67	25	7	67	26	8	32	
24	63	44	1	64	9	1	64	32	4	64	53	6	65	12	9	65	30	1	65	45	2	65	58	3	66	8	9	66	17	3	66	23	3	66	26	8	66	28	1	36	
20	62	49	8	63	14	0	63	36	6	63	57	2	64	15	7	64	32	4	64	47	1	64	59	9	65	10	2	65	18	4	65	24	3	65	28	0	65	29	4	40	
16	61	55	1	62	18	6	62	40	5	63	0	4	63	18	6	63	34	7	63	48	9	64	1	5	64	11	5	64	19	5	64	25	4	64	29	1	64	30	7	44	
12	61	0	1	61	23	0	61	44	1	62	3	5	62	21	2	62	36	9	62	50	7	63	2	8	63	12	7	63	20	7	63	26	5	63	30	2	63	32	0	48	
8	60	4	9	60	27	0	60	47	6	61	6	4	61	23	6	61	39	0	61	52	5	62	4	2	62	13	9	62	21	8	62	27	7	62	31	5	62	33	3	52	
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22 0	58	13	5	58	34	4	58	54	1	59	11	9	59	28	2	59	42	6	59	55	6	60	7	0	60	16	3	60	24	0	60	29	9	60	33	8	60	35	9	2	0
21 56	57	17	5	57	37	9	57	57	0	58	14	5	58	30	3	58	44	5	58	57	1	59	8	3	59	17	6	59	25	1	59	31	0	59	34	9	59	37	3	4	
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48	55	24	8	55	44	3	56	2	4	56	19	1	56	34	2	56	47	9	57	0	1	57	10	8	57	19	5	57	27	3	57	33	2	57	37	4	57	39	9	12	
44	54	28	2	54	47	3	55	5	0	55	21	2	55	36	1	55	49	5	56	1	6	56	12	2	56	21	0	56	28	4	56	34	3	56	38	6	56	41	3	16	
40	53	31	4	53	50	1	54	7	5	54	23	4	54	38	0	54	51	1	55	2	9	55	13	3	55	22	2	55	29	5	55	35	4	55	39	8	55	42	6	20	
36	52	34	5	52	52	7	53	9	8	53	25	4	53	39	7	53	52	7	54	4	2	54	14	5	54	23	3	54	30	7	54	36	5	54	40	9	54	44	0	24	
32	51	37	5	51	55	3	52	12	0	52	27	3	52	41	4	52	54	1	53	5	5	53	15	7	53	24	4	53	31	8	53	37	7	53	42	2	53	45	3	28	
28	50	40	3	50	57	8	51	14	1	51	29	2	51	43	0	51	55	6	52	6	8	52	16	9	52	25	5	52	32	8	52	38	9	52	43	4	52	46	7	32	
24	49	43	1	50	0	2	50	16	2	50	31	0	50	44	6	50	57	0	51	8	1	51	18	1	51	26	6	51	34	0	51	39	9	51	44	7	51	48	1	36	
20	48	45	7	49	2	6	49	18	2	49	32	8	49	46	2	49	58	3	50	9	4	50	19	2	50	27	8	50	35	1	50	41	1	50	45	9	50	49	5	40	
16	47	48	2	48	4	7	48	20	2	48	34	4	48	47	7	48	59	7	49	10	5	49	20	4	49	28	9	49	36	2	49	42	3	49	47	2	49	50	8	44	
12	46	50	6	47	6	9	47	22	0	47	36	2	47	49	1	48	0	9	48	11	8	48	21	5	48	30	0	48	37	4	48	43	5	48	48	4	48	52	2	48	
8	45	53	0	46	8	9	46	23	9	46	37	7	46	50	6	47	2	3	47	12	9	47	22	6	47	31	0	47	38	5	47	44	7								

		LATITUDE 11°.													
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	0	88 0 0	87 0 0	86 0 0	85 0 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	0	0
24	0	88 0 0	87 0 0	86 0 0	85 0 0	84 0 0	83 0 0	82 0 0	81 0 0	80 0 0	79 0 0	78 0 0	77 0 0	0	0
23	56	87 46 4	86 50 7	85 53 0	84 54 4	83 55 3	82 56 0	81 56 5	80 57 0	79 57 2	78 57 5	77 57 7	76 57 9	4	4
	52	87 12 2	86 25 2	85 33 0	84 38 1	83 41 6	82 44 2	81 46 2	80 47 8	79 49 0	78 49 9	77 50 9	76 51 8	8	8
	48	86 26 9	85 48 4	85 2 7	84 12 7	83 19 9	82 25 3	81 29 5	80 32 9	79 35 8	78 37 7	77 39 7	76 41 4	12	12
	44	85 36 4	85 4 6	84 24 9	83 39 9	82 51 2	82 0 0	81 7 0	80 12 7	79 17 4	78 21 0	77 24 5	76 27 4	16	16
	40	84 43 0	84 16 2	83 41 8	83 1 5	82 17 0	81 29 3	80 39 4	79 47 7	78 54 7	78 0 2	77 5 2	76 9 5	20	20
	36	83 48 0	83 25 1	82 55 0	82 19 0	81 38 4	80 54 3	80 7 5	79 18 4	78 27 9	77 35 5	76 42 2	75 48 2	24	24
	32	82 52 0	82 32 2	82 5 6	81 33 2	80 56 2	80 15 4	79 31 8	78 45 5	77 57 6	77 7 0	76 16 0	75 23 7	28	28
	28	81 55 4	81 38 0	81 14 3	80 45 2	80 11 3	79 34 0	78 52 9	78 9 4	77 23 7	76 35 9	75 46 7	74 56 3	32	32
	24	80 58 4	80 42 9	80 21 7	79 55 4	79 24 5	78 49 9	78 11 5	77 30 7	76 47 4	76 1 8	75 14 8	74 26 3	36	36
	20	80 1 0	79 47 1	79 28 2	79 4 2	78 35 8	78 3 6	77 27 7	76 49 4	76 8 6	75 25 2	74 40 4	73 53 8	40	40
	16	79 3 4	78 50 7	78 33 7	78 11 9	77 45 8	77 15 8	76 42 5	76 6 5	75 27 8	74 46 6	74 3 6	73 18 9	44	44
	12	78 5 7	77 54 3	77 38 7	77 18 7	76 54 4	76 26 9	75 55 6	75 21 6	74 45 2	74 6 0	73 24 9	72 42 2	48	48
	8	77 7 7	76 57 6	76 43 2	76 24 6	76 2 3	75 36 7	75 7 4	74 35 5	74 1 0	73 23 6	72 44 7	72 3 7	52	52
	4	76 9 8	76 0 6	75 47 2	75 30 2	75 9 4	74 45 6	74 18 1	73 47 9	73 15 2	72 40 0	72 2 7	71 23 6	0	56
23	0	75 11 6	75 3 3	74 51 2	74 35 3	74 15 9	73 53 6	73 27 8	72 59 6	72 28 7	71 55 0	71 19 5	70 42 2	1	0
22	56	74 13 3	74 5 7	73 54 6	73 40 1	73 22 0	73 1 0	72 36 7	72 10 2	71 40 9	71 8 9	70 35 1	69 59 4	4	4
	52	73 15 2	73 8 2	72 57 9	72 44 4	72 27 6	72 7 8	71 45 0	71 19 9	70 52 1	70 22 0	69 49 7	69 15 5	8	8
	48	72 17 0	72 10 7	72 1 2	71 48 4	71 32 7	71 14 4	70 52 8	70 29 0	70 0 6	69 37 5	69 12 6	68 45 3	12	12
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	40	70 20 3	70 15 2	70 6 9	69 56 0	69 42 1	69 25 8	69 6 8	68 45 6	68 22 0	67 55 7	67 27 9	66 58 1	20	20
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	32	68 23 6	68 19 3	68 12 2	68 2 7	67 50 7	67 36 2	67 19 3	67 0 1	66 38 9	66 15 3	65 49 9	65 22 6	28	28
	28	67 25 2	67 21 3	67 14 8	67 5 9	66 54 6	66 41 2	66 24 9	66 6 9	65 46 6	65 24 3	65 0 1	64 34 0	32	32
	24	66 26 8	66 23 2	66 17 4	66 9 0	65 58 4	65 45 7	65 30 5	65 13 4	64 54 2	64 32 8	64 9 6	63 44 8	36	36
	20	65 28 3	65 25 3	65 19 7	65 11 9	65 2 1	64 50 1	64 35 7	64 19 6	64 1 3	63 40 9	63 18 8	62 55 0	40	40
	16	64 30 0	64 27 1	64 22 2	64 14 9	64 5 6	63 54 3	63 40 7	63 25 5	63 8 1	62 48 7	62 27 6	62 4 9	44	44
	12	63 31 5	63 29 1	63 24 4	63 17 8	63 9 1	62 58 5	62 45 6	62 31 0	62 14 6	61 56 2	61 36 1	61 14 3	48	48
	8	62 33 1	62 30 9	62 26 8	62 20 6	62 12 4	62 2 4	61 50 2	61 36 6	61 20 8	61 3 3	60 44 2	60 23 4	52	52
	4	61 34 7	61 32 8	61 29 0	61 23 3	61 15 7	61 6 3	60 54 8	60 41 8	60 27 0	60 10 2	59 52 0	59 32 1	1	56
22	0	60 36 2	60 34 6	60 31 2	60 26 0	60 18 8	60 10 0	59 59 2	59 46 9	59 32 8	59 16 9	58 59 4	58 40 5	2	0
21	56	59 37 7	59 36 5	59 33 4	59 28 5	59 22 0	59 13 7	59 3 5	58 51 9	58 38 5	58 23 3	58 6 7	57 48 6	4	4
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	44	56 42 3	56 41 8	56 39 8	56 36 1	56 30 9	56 24 2	56 15 7	56 5 9	55 54 6	55 41 5	55 27 2	55 11 5	16	16
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	36	54 45 4	54 45 5	54 44 0	54 41 1	54 36 7	54 30 8	54 23 4	54 14 7	54 4 5	53 52 9	53 40 0	53 25 6	24	24
	32	53 47 0	53 47 3	53 46 1	53 43 5	53 39 4	53 34 1	53 27 1	53 19 0	53 9 4	52 58 4	52 46 1	52 32 5	28	28
	28	52 48 5	52 49 0	52 48 2	52 45 9	52 42 2	52 37 3	52 30 8	52 23 2	52 14 2	52 3 7	51 52 1	51 39 2	32	32
	24	51 50 1	51 50 7	51 50 2	51 48 3	51 45 0	51 40 4	51 34 4	51 27 4	51 18 8	51 9 0	50 57 9	50 45 7	36	36
	20	50 51 6	50 52 6	50 52 2	50 50 6	50 47 7	50 43 6	50 38 0	50 31 4	50 23 5	50 14 1	50 3 8	49 52 1	40	40
	16	49 53 2	49 54 4	49 54 3	49 52 9	49 50 4	49 46 8	49 41 6	49 35 4	49 28 0	49 19 3	49 9 3	48 58 4	44	44
	12	48 54 7	48 56 2	48 56 3	48 55 3	48 53 1	48 49 8	48 45 1	48 39 4	48 32 5	48 24 2	48 15 0	48 4 6	48	48
	8	47 56 3	47 57 9	47 58 4	47 57 8	47 55 8	47 52 8	47 48 5	47 43 4	47 36 8	47 29 2	47 20 4	47 10 7	52	52
	4	46 57 9	46 59 7	47 0 5	47 0 0	46 58 5	46 55 9	46 52 0	46 47 2	46 41 2	46 34 0	46 25 8	46 16 6	2	56
21	0	45 59 5	46 1 5	46 2 5	46 2 3	46 1 1	45 58 9	45 55 4	45 51 0	45 45 5	45 38 8	45 31 2	45 22 5	3	0

LATITUDE 11°.																	
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.														Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°			
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
21	0	43 57.4	44 12.8	44 27.4	44 40.8	44 53.4	45 4.8	45 15.3	45 24.9	45 33.2	45 40.7	45 47.0	45 52.2	45 56.4			
20	56	42 59.5	43 14.7	43 29.0	43 42.3	43 54.7	44 6.1	44 16.4	44 26.0	44 34.3	44 41.8	44 48.2	44 53.5	44 57.9			
	52	42 1.6	42 16.5	42 30.6	42 43.8	42 56.0	43 7.3	43 17.6	43 27.0	43 35.5	43 42.9	43 49.3	43 54.8	43 59.3			
	48	41 3.5	41 18.3	41 32.2	41 45.2	41 57.3	42 8.5	42 18.7	42 28.2	42 36.5	42 44.1	42 50.5	42 56.1	43 0.7			
	44	40 5.5	40 20.0	40 33.8	40 46.6	40 58.6	41 9.6	41 19.9	41 29.3	41 37.7	41 45.2	41 51.8	41 57.4	42 2.2			
	40	39 7.4	39 21.7	39 35.3	39 47.9	39 59.8	40 10.8	40 21.0	40 30.4	40 38.7	40 46.4	40 53.0	40 58.8	41 3.6			
	36	38 9.1	38 23.4	38 36.7	38 49.3	39 1.3	39 12.0	39 22.1	39 31.5	39 39.9	39 47.5	39 54.3	40 0.1	40 5.2			
	32	37 10.9	37 24.9	37 38.2	37 50.6	38 2.3	38 13.1	38 23.2	38 32.6	38 41.0	38 48.7	38 55.5	39 1.5	39 6.6			
	28	36 12.6	36 26.5	36 39.6	36 51.9	37 3.5	37 14.3	37 24.3	37 33.7	37 42.1	37 49.8	37 56.8	38 2.7	38 8.2			
	24	35 14.3	35 28.0	35 41.0	35 53.2	36 4.7	36 15.4	36 25.4	36 34.8	36 43.3	36 51.1	36 58.0	37 4.2	37 9.6			
	20	34 16.0	34 29.5	34 42.3	34 54.5	35 5.9	35 16.5	35 26.5	35 35.9	35 44.4	35 52.2	35 59.3	36 5.6	36 11.2			
	16	33 17.6	33 30.9	33 43.7	33 55.7	34 7.0	34 17.7	34 27.6	34 37.0	34 45.5	34 53.4	35 0.6	35 7.0	35 12.7			
	12	32 19.1	32 32.3	32 45.0	32 56.9	33 8.2	33 18.8	33 28.8	33 38.1	33 46.7	33 54.6	34 1.9	34 8.4	34 14.2			
	8	31 20.6	31 33.8	31 46.3	31 58.1	32 9.3	32 19.9	32 29.8	32 39.3	32 47.8	32 55.9	33 3.2	33 9.8	33 15.8			
	4	30 22.1	30 35.1	30 47.6	30 59.3	31 10.5	31 21.0	31 31.0	31 40.4	31 49.0	31 57.1	32 4.5	32 11.2	32 17.3			
20	0	29 23.7	29 36.5	29 48.8	30 0.5	30 11.6	30 22.2	30 32.0	30 41.5	30 50.2	30 58.3	31 5.8	31 12.6	31 19.0			
19	56	28 25.1	28 37.8	28 50.1	29 1.7	29 12.7	29 23.2	29 33.2	29 42.6	29 51.4	29 59.6	30 7.2	30 14.1	30 20.6			
	52	27 26.5	27 39.2	27 51.2	28 2.9	28 13.9	28 24.4	28 34.3	28 43.7	28 52.5	29 0.8	29 8.6	29 15.6	29 22.2			
	48	26 27.9	26 40.4	26 52.5	27 4.0	27 15.0	27 25.4	27 35.4	27 44.9	27 53.7	28 2.1	28 9.9	28 17.2	28 23.8			
	44	25 29.3	25 41.7	25 53.7	26 5.2	26 16.1	26 26.5	26 36.5	26 46.0	26 54.9	27 3.4	27 11.3	27 18.6	27 25.5			
	40	24 30.6	24 42.9	24 54.9	25 6.3	25 17.2	25 27.6	25 37.6	25 47.2	25 56.1	26 4.7	26 12.7	26 20.1	26 27.1			
	36	23 31.9	23 44.2	23 56.0	24 7.4	24 18.3	24 28.7	24 38.7	24 48.4	24 57.4	25 6.0	25 14.0	25 21.7	25 28.8			
	32	22 33.2	22 45.4	22 57.2	23 8.6	23 19.4	23 29.9	23 39.9	23 49.5	23 58.6	24 7.3	24 15.5	24 23.2	24 30.6			
	28	21 34.5	21 46.7	21 58.4	22 9.7	22 20.5	22 31.0	22 41.0	22 50.7	22 59.8	23 8.6	23 16.9	23 24.8	23 32.3			
	24	20 35.8	20 47.8	20 59.5	21 10.8	21 21.6	21 32.1	21 42.2	21 51.9	22 1.1	22 10.0	22 18.4	22 26.4	22 34.0			
	20	19 37.1	19 49.0	20 0.7	20 11.9	20 22.7	20 33.2	20 43.2	20 53.1	21 2.4	21 11.4	21 19.9	21 28.1	21 35.8			
	16	18 38.3	18 50.2	19 1.8	19 13.0	19 23.9	19 34.3	19 44.4	19 54.3	20 3.7	20 12.7	20 21.4	20 29.6	20 37.6			
	12	17 39.5	17 51.3	18 2.9	18 14.1	18 24.9	18 35.4	18 45.6	18 55.5	19 5.0	19 14.2	19 22.9	19 31.3	19 39.4			
	8	16 40.7	16 52.5	17 4.0	17 15.1	17 26.0	17 36.6	17 46.8	17 56.8	18 6.3	18 15.5	18 24.4	18 33.0	18 41.2			
	4	15 41.9	15 53.6	16 5.1	16 16.3	16 27.1	16 37.7	16 48.0	16 58.1	17 7.6	17 17.0	17 25.9	17 34.7	17 43.0			
19	0	14 43.1	14 54.8	15 6.2	15 17.4	15 28.3	15 38.9	15 49.2	15 59.3	16 9.0	16 18.4	16 27.5	16 36.3	16 45.0			
18	56	13 44.3	13 55.9	14 7.4	14 18.5	14 29.4	14 40.0	14 50.4	15 0.5	15 10.3	15 19.9	15 29.1	15 38.1	15 46.8			
	52	12 45.4	12 57.0	13 8.5	13 19.6	13 30.6	13 41.2	13 51.5	14 1.8	14 11.7	14 21.3	14 30.8	14 39.9	14 48.8			
	48	11 46.6	11 58.1	12 9.6	12 20.7	12 31.7	12 42.3	12 52.8	13 3.1	13 13.1	13 22.9	13 32.4	13 41.7	13 50.7			
	44	10 47.7	10 59.3	11 10.7	11 21.8	11 32.7	11 43.5	11 54.0	12 4.4	12 14.5	12 24.4	12 34.1	12 43.5	12 52.7			
	40	9 48.9	10 0.4	10 11.8	10 22.9	10 33.9	10 44.7	10 55.2	11 5.7	11 15.9	11 25.9	11 35.7	11 45.3	11 54.7			
	36	8 50.0	9 1.5	9 12.9	9 24.0	9 35.0	9 45.8	9 56.5	10 7.1	10 17.4	10 27.5	10 37.4	10 47.2	10 56.7			
	32	7 51.1	8 2.6	8 14.0	8 25.2	8 36.2	8 47.0	8 57.8	9 8.4	9 18.8	9 29.1	9 39.1	9 49.0	9 58.8			
	28	6 52.2	7 3.7	7 15.1	7 26.3	7 37.4	7 48.3	7 59.1	8 9.8	8 20.3	8 30.7	8 40.9	8 51.0	9 0.9			
	24	5 53.3	6 4.8	6 16.2	6 27.5	6 38.5	6 49.5	7 0.4	7 11.1	7 21.8	7 32.3	7 42.7	7 52.9	8 3.0			
	20	4 54.5	5 5.9	5 17.3	5 28.6	5 39.8	5 50.7	6 1.7	6 12.6	6 23.3	6 34.0	6 44.4	6 54.9	7 5.2			
	16	3 55.6	4 7.0	4 18.4	4 29.7	4 40.9	4 52.0	5 3.0	5 14.0	5 24.9	5 35.6	5 46.3	5 56.9	6 7.3			
	12	2 56.7	3 8.1	3 19.6	3 30.8	3 42.1	3 53.3	4 4.4	4 15.5	4 26.4	4 37.4	4 48.1	4 58.8	5 9.5			
	8	1 57.8	2 9.3	2 20.7	2 32.0	2 43.3	2 54.5	3 5.8	3 17.0	3 28.0	3 39.1	3 50.0	4 0.9	4 11.8			
	4	0 58.9	1 10.3	1 21.8	1 33.1	1 44.6	1 55.8	2 7.1	2 18.5	2 29.7	2 40.8	2 51.9	3 3.0	3 14.1			
18	0	0 0.0	0 11.4	0 22.9	0 34.3	0 45.8	0 57.1	1 8.5	1 20.0	1 31.3	1 42.6	1 53.9	2 5.2	2 16.4			

LATITUDE 11°.

Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
21 0	45 59.5	46 1.5	46 2.5	46 2.3	46 1.1	45 58.9	45 55.4	45 51.0	45 45.5	45 38.8	45 31.2	45 22.5	3 0		
20 56	45 1.1	45 3.3	45 4.5	45 4.7	45 3.8	45 1.9	44 58.8	44 54.8	44 49.7	44 43.5	44 36.4	44 28.3	4 4		
52	44 2.7	44 5.2	44 6.6	44 7.0	44 6.4	44 4.8	44 2.2	43 58.6	43 53.9	43 48.2	43 41.6	43 34.0	8 8		
48	43 4.3	43 7.0	43 8.7	43 9.4	43 9.0	43 7.8	43 5.5	43 2.4	42 58.1	42 52.9	42 46.7	42 39.7	12 12		
44	42 5.9	42 8.8	42 10.7	42 11.7	42 11.7	42 10.8	42 8.8	42 6.0	42 2.3	41 57.5	41 51.8	41 45.2	16 16		
40	41 7.6	41 10.6	41 12.8	41 14.0	41 14.3	41 13.8	41 12.1	41 9.8	41 6.4	41 2.1	40 56.9	40 50.8	20 20		
36	40 9.1	40 12.5	40 14.8	40 16.3	40 16.9	40 16.7	40 15.4	40 13.4	40 10.5	40 6.5	40 1.9	39 56.3	24 24		
32	39 10.9	39 14.3	39 16.9	39 18.7	39 19.5	39 19.6	39 18.7	39 17.1	39 14.5	39 11.1	39 6.8	39 1.7	28 28		
28	38 12.5	38 16.2	38 19.0	38 21.0	38 22.2	38 22.5	38 22.0	38 20.8	38 18.6	38 15.5	38 11.7	38 7.1	32 32		
24	37 14.2	37 18.0	37 21.1	37 23.3	37 24.8	37 25.5	37 25.2	37 24.4	37 22.6	37 19.9	37 16.6	37 12.5	36 36		
20	36 15.9	36 19.9	36 23.2	36 25.7	36 27.4	36 28.4	36 28.5	36 28.0	36 26.6	36 24.4	36 21.5	36 17.8	40 40		
16	35 17.6	35 21.8	35 25.3	35 28.1	35 30.1	35 31.3	35 31.8	35 31.6	35 30.6	35 28.8	35 26.4	35 23.2	44 44		
12	34 19.3	34 23.7	34 27.5	34 30.5	34 32.7	34 34.3	34 35.0	34 35.2	34 34.6	34 33.2	34 31.2	34 28.5	48 48		
8	33 21.0	33 25.7	33 29.6	33 32.8	33 35.4	33 37.2	33 38.3	33 38.8	33 38.6	33 37.6	33 36.0	33 33.7	52 52		
4	32 22.8	32 27.6	32 31.8	32 35.2	32 38.0	32 40.2	32 41.6	32 42.5	32 42.6	32 42.0	32 40.8	32 38.9	3 56		
20 0	31 24.5	31 29.6	31 33.9	31 37.6	31 40.7	31 43.1	31 44.9	31 46.1	31 46.6	31 46.3	31 45.5	31 44.1	4 0		
19 56	30 26.3	30 31.5	30 36.1	30 40.0	30 43.3	30 46.1	30 48.2	30 49.8	30 50.5	30 50.7	30 50.3	30 49.3	4 4		
52	29 28.1	29 33.5	29 38.2	29 42.5	29 46.1	29 49.1	29 51.5	29 53.3	29 54.6	29 55.0	29 55.1	29 54.4	8 8		
48	28 29.9	28 35.4	28 40.5	28 44.9	28 48.8	28 52.2	28 54.8	28 57.0	28 58.5	28 59.5	28 59.9	28 59.7	12 12		
44	27 31.7	27 37.5	27 42.7	27 47.4	27 51.6	27 55.2	27 58.1	28 0.6	28 2.6	28 3.8	28 4.7	28 4.9	16 16		
40	26 33.6	26 39.5	26 45.0	26 49.9	26 54.3	26 58.1	27 1.4	27 4.3	27 6.5	27 8.2	27 9.4	27 10.1	20 20		
36	25 35.4	25 41.6	25 47.3	25 52.4	25 57.0	26 1.2	26 4.8	26 8.0	26 10.6	26 12.6	26 14.2	26 15.2	24 24		
32	24 37.3	24 43.7	24 49.6	24 54.9	24 59.8	25 4.3	25 8.1	25 11.7	25 14.6	25 17.0	25 19.0	25 20.4	28 28		
28	23 39.3	23 45.7	23 51.8	23 57.5	24 2.6	24 7.4	24 11.5	24 15.4	24 18.7	24 21.4	24 23.8	24 25.6	32 32		
24	22 41.2	22 47.9	22 54.2	22 60.1	23 5.5	23 10.5	23 14.9	23 19.1	23 22.7	23 25.8	23 28.6	23 30.9	36 36		
20	21 43.0	21 50.0	21 56.6	22 2.2	22 8.3	22 13.6	22 18.4	22 22.8	22 26.8	22 30.3	22 33.4	22 36.1	40 40		
16	20 45.0	20 52.2	20 58.9	21 5.3	21 11.2	21 16.8	21 21.8	21 26.6	21 30.9	21 34.7	21 38.3	21 41.3	44 44		
12	19 47.1	19 54.3	20 1.3	20 7.9	20 14.1	20 19.9	20 25.3	20 30.4	20 35.0	20 39.3	20 43.1	20 46.6	48 48		
8	18 49.0	18 56.6	19 3.8	19 10.6	19 17.0	19 23.1	19 28.8	19 34.2	19 39.2	19 43.7	19 48.0	19 51.9	52 52		
4	17 51.1	17 58.8	18 6.2	18 13.3	18 19.9	18 26.4	18 32.3	18 38.1	18 43.4	18 48.3	18 52.9	18 57.2	4 56		
19 0	16 53.1	17 1.1	17 8.7	17 16.0	17 22.9	17 29.6	17 35.9	17 41.9	17 47.6	17 52.9	17 57.8	18 2.5	5 0		
18 56	15 55.3	16 3.3	16 11.2	16 18.7	16 25.9	16 32.9	16 39.4	16 45.8	16 51.8	16 57.4	17 2.8	17 7.9	4 4		
52	14 57.3	15 5.7	15 13.7	15 21.5	15 29.0	15 36.2	15 43.1	15 49.7	15 56.1	16 2.0	16 7.8	16 13.2	8 8		
48	13 59.5	14 8.0	14 16.3	14 24.3	14 32.0	14 39.6	14 46.7	14 53.7	15 0.3	15 6.7	15 12.8	15 18.7	12 12		
44	13 1.6	13 10.4	13 18.9	13 27.1	13 35.1	13 43.0	13 50.4	13 57.7	14 4.7	14 11.4	14 17.9	14 24.1	16 16		
40	12 3.8	12 12.8	12 21.5	12 30.0	12 38.3	12 46.4	12 54.1	13 1.7	13 9.1	13 16.1	13 23.0	13 29.6	20 20		
36	11 6.1	11 15.2	11 24.2	11 33.0	11 41.4	11 49.8	11 57.9	12 5.8	12 13.5	12 20.9	12 28.1	12 35.1	24 24		
32	10 8.3	10 17.7	10 26.9	10 35.9	10 44.6	10 53.3	11 1.7	11 10.0	11 18.0	11 25.7	11 33.3	11 40.7	28 28		
28	9 10.6	9 20.2	9 29.6	9 38.8	9 47.9	9 56.9	10 5.5	10 14.1	10 22.5	10 30.6	10 38.5	10 46.3	32 32		
24	8 12.9	8 22.7	8 32.3	8 41.9	8 51.2	9 0.4	9 9.4	9 18.3	9 27.0	9 35.4	9 43.8	9 51.9	36 36		
20	7 15.2	7 25.2	7 35.2	7 44.9	7 54.5	8 4.1	8 13.3	8 22.6	8 31.5	8 40.4	8 49.1	8 57.7	40 40		
16	6 17.6	6 27.9	6 38.0	6 48.1	6 57.9	7 7.7	7 17.3	7 26.8	7 36.2	7 45.3	7 54.5	8 3.4	44 44		
12	5 20.1	5 30.5	5 40.9	5 51.2	6 1.4	6 11.4	6 21.3	6 31.2	6 40.9	6 50.4	6 59.9	7 9.3	48 48		
8	4 22.5	4 33.2	4 43.9	4 54.4	5 4.8	5 15.2	5 25.4	5 35.6	5 45.7	5 55.5	6 5.3	6 15.1	52 52		
4	3 25.0	3 36.0	3 46.9	3 57.6	4 8.3	4 19.0	4 29.5	4 40.0	4 50.4	5 0.7	5 10.9	5 21.1	5 56		
18 0	2 27.6	2 38.8	2 49.8	3 0.9	3 11.9	3 22.8	3 33.7	3 44.5	3 55.3	4 5.9	4 16.5	4 27.1	6 0		

LATITUDE 11°.																			
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE.														Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°					
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	79	0.0	78	0.0	77	0.0	76	0.0	75	0.0	74	0.0	73	0.0	72	0.0	71	0.0
23	56	78	57.4	77	57.6	76	57.9	75	57.9	74	58.1	73	58.1	72	58.2	71	58.4	70	58.5
	52	78	49.3	77	50.0	76	51.0	75	51.7	74	52.1	73	52.4	72	52.9	71	53.6	70	53.8
	48	78	36.2	77	38.0	76	39.4	75	41.1	74	42.3	73	43.3	72	44.2	71	45.4	70	46.1
	44	78	18.2	77	21.5	76	24.3	75	26.7	74	29.0	73	30.6	72	32.2	71	34.1	70	35.3
	40	77	55.8	77	0.8	76	4.9	75	8.6	74	12.0	73	14.6	72	17.1	71	19.6	70	21.6
	36	77	29.3	76	35.9	75	41.9	74	46.9	73	51.3	72	55.3	71	58.8	71	2.3	70	5.0
	32	76	59.1	76	7.7	75	15.3	74	21.9	73	27.7	72	32.8	71	37.6	70	42.2	69	45.8
	28	76	25.7	75	36.1	74	45.7	73	53.9	73	1.1	72	7.6	71	13.5	70	19.2	69	24.0
	24	75	49.4	75	1.9	74	13.0	73	23.0	72	31.9	71	39.8	70	46.9	69	53.8	68	59.7
	20	75	10.5	74	25.0	73	38.0	72	49.4	72	0.0	71	9.3	70	17.9	69	26.1	68	33.0
	16	74	29.5	73	45.9	73	0.6	72	13.9	71	25.8	70	36.7	69	46.7	68	56.1	68	4.4
	12	73	46.5	73	4.8	72	21.3	71	36.0	70	49.6	70	1.9	69	13.3	68	24.1	67	33.5
	8	73	2.0	72	21.8	71	40.0	70	56.3	70	11.5	69	25.3	68	38.0	67	50.1	67	0.8
	4	72	15.8	71	37.4	70	57.1	70	15.1	69	31.6	68	46.9	68	1.0	67	14.3	66	26.5
23	0	71	28.5	70	51.5	70	12.8	69	32.2	68	50.3	68	6.9	67	22.3	66	37.1	65	50.3
22	56	70	40.0	70	4.4	69	27.1	68	48.2	68	7.4	67	25.4	66	42.3	65	58.2	65	12.7
	52	69	50.4	69	16.2	68	40.4	68	2.6	67	23.4	66	42.7	66	0.8	65	17.9	64	33.6
	48	69	0.0	68	27.2	67	52.5	67	16.1	66	38.2	65	58.8	65	18.0	64	36.4	63	53.3
	44	68	8.9	67	37.1	67	3.7	66	28.6	65	51.9	65	13.7	64	34.1	63	53.7	63	11.8
	40	67	17.0	66	46.5	66	14.2	65	40.2	65	4.6	64	27.6	63	49.3	63	10.0	62	29.2
	36	66	24.6	65	55.1	65	23.9	64	50.9	64	16.4	63	40.6	63	3.4	62	25.2	61	45.4
	32	65	31.6	65	3.0	64	32.8	64	1.0	63	27.6	62	52.8	62	16.6	61	39.4	61	0.9
	28	64	38.1	64	10.5	63	41.2	63	10.4	62	38.1	62	4.2	61	29.0	60	52.9	60	15.3
	24	63	44.1	63	17.4	62	49.2	62	19.2	61	47.8	61	14.9	60	40.7	60	5.6	59	29.0
	20	62	49.8	62	23.9	61	56.5	61	27.5	60	56.8	60	24.9	59	51.8	59	17.5	58	41.9
	16	61	55.1	61	30.0	61	3.4	60	35.1	60	5.5	59	34.4	59	2.2	58	28.9	57	54.1
	12	61	0.1	60	35.8	60	9.8	59	42.4	59	13.6	58	43.5	58	12.0	57	39.5	57	5.7
	8	60	4.9	59	41.1	59	16.0	58	49.2	58	21.3	57	51.9	57	21.3	56	49.6	56	16.6
	4	59	9.2	58	46.2	58	21.7	57	55.8	57	28.5	56	59.9	56	30.0	55	59.3	55	27.0
22	0	58	13.5	57	50.9	57	27.2	57	2.0	56	35.4	56	7.3	55	38.4	55	8.3	54	36.9
21	56	57	17.5	56	55.6	56	32.3	56	7.8	55	41.8	55	14.6	54	46.2	54	16.9	53	46.4
	52	56	21.2	55	59.9	55	37.3	55	13.2	54	48.0	54	21.4	53	53.7	53	25.1	52	55.2
	48	55	24.8	55	4.0	54	41.8	54	18.5	53	53.7	53	27.9	53	0.9	52	33.0	52	3.8
	44	54	28.2	54	7.9	53	46.3	53	23.4	52	59.3	52	34.0	52	7.7	51	40.5	51	11.9
	40	53	31.4	53	11.6	52	50.5	52	28.1	52	4.6	51	39.9	51	14.2	50	47.6	50	19.7
	36	52	34.5	52	15.1	51	54.5	51	32.7	51	9.6	50	45.6	50	20.4	49	54.4	49	27.2
	32	51	37.5	51	18.4	50	58.3	50	37.0	50	14.6	49	51.0	49	26.3	49	0.9	48	34.2
	28	50	40.3	50	21.7	50	2.0	49	41.1	49	19.1	48	56.1	48	32.0	48	7.1	47	41.1
	24	49	43.1	49	24.7	49	5.5	48	45.0	48	23.5	48	0.9	47	37.5	47	13.1	46	47.5
	20	48	45.7	48	27.8	48	8.8	47	48.8	47	27.7	47	5.6	46	42.6	46	18.8	45	53.9
	16	47	48.2	47	30.6	47	12.1	46	52.4	46	31.8	46	10.2	45	47.6	45	24.3	44	59.9
	12	46	50.6	46	33.4	46	15.1	45	55.9	45	35.6	45	14.4	44	52.4	44	29.6	44	5.6
	8	45	53.0	45	36.0	45	18.2	44	59.2	44	39.4	44	18.6	43	57.0	43	34.6	43	11.2
	4	44	55.2	44	38.6	44	21.0	44	2.5	43	43.0	43	22.6	43	1.4	42	39.5	42	16.5
21	0	43	57.4	43	41.0	43	23.8	43	5.6	42	46.5	42	26.5	42	5.7	41	44.2	41	21.6

LATITUDE 11°.

Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	66 0-0	65 0-0	64 0-0	63 0-0	62 0-0	61 0-0	60 0-0	59 0-0	58 0-0	57 0-0	56 0-0	55 0-0	0 0
23 56	65 58-8	64 58-8	63 58-9	62 59-0	61 58-9	60 59-0	59 58-9	58 59-2	57 59-2	56 59-0	55 59-2	54 59-2	4
52	65 55-1	64 55-2	63 55-5	62 55-7	61 55-8	60 55-9	59 56-0	58 56-4	57 56-5	56 56-4	55 56-6	54 56-8	8
48	65 48-9	64 49-4	63 49-8	62 50-4	61 50-6	60 50-9	59 51-3	58 51-7	57 51-9	56 52-1	55 52-3	54 52-6	12
44	65 40-4	64 41-1	63 42-0	62 42-7	61 43-3	60 43-9	59 44-5	58 45-1	57 45-6	56 46-0	55 46-5	54 47-0	16
40	65 29-5	64 30-7	63 31-9	62 33-1	61 34-1	60 35-1	59 35-8	58 36-7	57 37-6	56 38-2	55 39-0	54 39-6	20
36	65 16-3	64 18-0	63 19-7	62 21-4	61 22-8	60 24-1	59 25-3	58 26-6	57 27-8	56 28-7	55 29-7	54 30-7	24
32	65 0-8	64 3-1	63 5-5	62 7-6	61 9-5	60 11-3	59 12-9	58 14-7	57 16-3	56 17-5	55 18-9	54 20-3	28
28	64 43-2	63 46-3	62 49-1	61 51-8	60 54-2	59 56-7	58 58-8	57 1-1	56 3-0	55 4-7	54 6-5	53 8-3	32
24	64 23-5	63 27-3	62 30-8	61 34-1	60 37-2	59 40-2	58 42-9	57 45-6	56 48-1	55 50-3	54 52-6	53 54-8	36
20	64 1-7	63 6-2	62 10-5	61 14-7	60 18-3	59 22-0	58 25-2	57 28-6	56 31-6	55 34-4	54 37-1	53 39-7	40
16	63 37-9	62 43-3	61 48-5	60 53-4	59 57-8	59 2-0	58 6-0	57 9-9	56 13-5	55 16-8	54 20-1	53 23-2	44
12	63 12-3	62 18-6	61 24-6	60 30-3	59 35-4	58 40-5	57 45-0	56 49-7	55 53-9	54 57-8	54 1-6	53 5-3	48
8	62 45-1	61 52-3	60 59-1	60 5-5	59 11-5	58 17-3	57 22-6	56 27-8	55 32-8	54 37-2	53 41-7	52 46-0	52
4	62 16-1	61 24-3	60 31-8	59 39-2	58 46-0	57 52-6	56 58-7	56 4-6	55 10-1	54 15-3	53 20-4	52 25-2	0 56
23 0	61 45-4	60 54-5	60 3-2	59 11-3	58 19-0	57 26-3	56 33-2	55 39-9	54 46-2	53 52-0	52 57-7	52 3-3	1 0
22 56	61 13-2	60 23-3	59 32-9	58 42-1	57 50-5	56 58-7	56 6-3	55 13-8	54 20-8	53 27-4	52 33-8	51 40-0	4
52	60 39-8	59 50-8	59 1-3	58 11-3	57 20-7	56 29-6	55 38-1	54 46-4	53 54-1	53 1-5	52 8-7	51 15-5	8
48	60 4-9	59 16-9	58 28-4	57 39-2	56 49-5	55 59-4	55 8-6	54 17-6	53 26-3	52 34-3	51 42-2	50 49-7	12
44	59 28-7	58 41-8	57 54-1	57 5-9	56 17-0	55 27-8	54 37-9	53 47-8	52 57-1	52 6-0	51 14-5	50 22-9	16
40	58 51-3	58 5-3	57 18-6	56 31-4	55 43-4	54 55-0	54 6-1	53 16-7	52 26-9	51 36-4	50 45-8	49 54-8	20
36	58 12-8	57 27-7	56 42-1	55 55-7	55 8-6	54 21-2	53 32-9	52 44-5	51 55-4	51 5-8	50 15-9	49 25-7	24
32	57 33-2	56 49-2	56 4-3	55 19-0	54 32-8	53 46-1	52 58-9	52 11-1	51 23-0	50 34-1	49 45-0	48 55-5	28
28	56 52-7	56 9-5	55 25-7	54 41-2	53 55-9	53 10-2	52 23-7	51 36-9	50 49-4	50 1-4	49 13-1	48 24-3	32
24	56 11-2	55 28-9	54 46-1	54 2-4	53 18-1	52 33-1	51 47-6	51 1-6	50 14-9	49 27-7	48 40-2	47 52-2	36
20	55 28-7	54 47-6	54 5-5	53 22-8	52 39-3	51 55-2	51 10-5	50 25-3	49 39-5	48 53-0	48 6-3	47 19-1	40
16	54 45-6	54 5-2	53 24-1	52 42-2	51 59-6	51 16-4	50 32-5	49 48-2	49 3-2	48 17-5	47 31-5	46 45-1	44
12	54 1-6	53 22-2	52 41-8	52 0-9	51 19-1	50 36-8	49 53-7	49 10-1	48 26-0	47 41-1	46 55-9	46 10-3	48
8	53 16-9	52 38-2	51 53-9	51 18-7	50 37-8	49 56-3	49 14-0	48 31-3	47 47-9	47 3-9	46 19-5	45 34-6	52
4	52 31-4	51 53-7	51 15-1	50 35-9	49 55-8	49 15-0	48 33-6	47 51-7	47 9-1	46 25-8	45 42-3	44 58-1	1 56
22 0	51 45-5	51 8-5	50 30-7	49 52-3	49 13-0	48 33-1	47 52-5	47 11-3	46 29-5	45 47-1	45 4-2	44 20-9	2 0
21 56	50 58-8	50 22-6	49 45-7	49 8-0	48 29-6	47 50-4	47 10-6	46 30-3	45 49-3	45 7-5	44 25-5	43 42-8	4
52	50 11-6	49 36-2	49 0-0	48 23-1	47 45-4	47 7-2	46 28-1	45 48-5	45 8-3	44 27-4	43 46-0	43 4-2	8
48	49 23-8	48 49-2	48 13-8	47 37-7	47 0-7	46 23-2	45 44-9	45 6-1	44 26-6	43 46-5	43 5-9	42 24-8	12
44	48 35-5	48 1-6	47 27-0	46 51-6	46 15-5	45 38-7	45 1-1	44 23-1	43 44-4	43 5-0	42 25-2	41 44-8	16
40	47 46-8	47 13-6	46 39-7	46 5-1	45 29-7	44 53-6	44 16-8	43 39-5	43 1-6	42 22-9	41 43-8	41 4-2	20
36	46 57-6	46 25-1	45 51-9	45 18-0	44 43-3	44 7-9	43 31-9	42 55-4	42 18-1	41 40-2	41 1-9	40 22-9	24
32	46 7-9	45 36-2	45 3-7	44 30-4	43 56-4	43 21-6	42 46-5	42 10-7	41 34-1	40 56-9	40 19-3	39 41-2	28
28	45 17-9	44 46-8	44 15-0	43 42-5	43 9-1	42 35-2	42 0-6	41 25-5	40 49-7	40 13-2	39 36-3	38 58-8	32
24	44 27-5	43 57-0	43 25-9	42 54-0	42 21-4	41 48-1	41 14-2	40 39-8	40 4-6	39 28-9	38 52-7	38 15-9	36
20	43 36-7	43 6-9	42 36-4	42 5-2	41 33-2	41 0-7	40 27-4	39 53-6	39 19-2	38 44-1	38 8-6	37 32-5	40
16	42 45-6	42 16-4	41 46-5	41 15-9	40 44-6	40 12-8	39 40-1	39 7-0	38 33-3	37 58-9	37 24-0	36 48-7	44
12	41 54-1	41 25-6	40 56-3	40 26-3	39 55-7	39 24-4	38 52-5	38 20-1	37 47-0	37 13-2	36 39-0	36 4-3	48
8	41 2-4	40 34-3	40 5-8	39 36-4	39 6-3	38 35-7	38 4-4	37 32-7	37 0-2	36 27-1	35 53-6	35 19-7	52
4	40 10-3	39 42-9	39 14-8	38 46-2	38 16-7	37 46-7	37 16-0	36 44-8	36 13-1	35 40-6	35 7-8	34 34-4	2 56
21 0	39 18-1	38 51-2	38 23-7	37 55-5	37 26-7	36 57-3	36 27-2	35 56-7	35 25-5	34 53-8	34 21-6	33 48-8	3 0

LATITUDE 11°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
15 0	21 0	43 57.4	43 41.0	43 23.8	43 5.6	42 46.5	42 26.5	42 5.7	41 44.2	41 21.6	40 58.5	40 34.4	40 9.7	39 44.2	3 0	9 0	
4	20 56	42 59.5	42 43.4	42 26.4	42 8.6	41 49.8	41 30.2	41 9.8	40 48.7	40 26.6	40 3.9	39 40.4	39 16.0	38 51.2	4	8 56	
8	52	42 1.6	41 45.7	41 29.0	41 11.5	40 53.0	40 33.8	40 13.8	39 53.0	39 31.4	39 9.1	38 46.0	38 22.2	37 57.8	8	52	
12	48	41 3.5	40 47.9	40 31.5	40 14.3	39 56.2	39 37.2	39 17.5	38 57.2	38 36.0	38 14.2	37 51.5	37 28.2	37 4.2	12	48	
16	44	40 5.5	39 50.1	39 33.9	39 17.0	38 59.2	38 40.5	38 21.3	38 1.3	37 40.5	37 19.0	36 56.9	36 34.1	36 10.5	16	44	
20	40	39 7.4	38 52.2	38 36.3	38 19.5	38 2.0	37 43.8	37 24.8	37 5.2	36 44.8	36 23.8	36 1.9	35 39.6	35 16.5	20	40	
24	36	38 9.1	37 54.2	37 38.5	37 22.1	37 4.8	36 46.9	36 28.2	36 9.0	35 49.0	35 28.3	35 7.0	34 45.1	34 22.4	24	36	
28	32	37 10.9	36 56.2	36 40.7	36 24.5	36 7.6	35 49.9	35 31.6	35 12.7	34 53.0	34 32.7	34 11.7	33 50.3	33 28.0	28	32	
32	28	36 12.6	35 58.1	35 42.9	35 26.9	35 10.2	34 52.8	34 34.8	34 16.3	33 56.9	33 37.0	33 16.5	32 55.2	32 33.6	32	28	
36	24	35 14.3	35 0.0	34 45.0	34 29.2	34 12.8	33 55.7	33 37.9	33 19.7	33 0.7	32 41.2	32 20.9	32 0.2	31 38.8	36	24	
40	20	34 16.0	34 1.8	33 46.9	33 31.5	33 15.3	32 58.4	32 41.0	32 23.1	32 4.4	31 45.1	31 25.4	31 4.9	30 44.1	40	20	
44	16	33 17.6	33 3.5	32 48.9	32 33.7	32 17.7	32 1.1	31 43.9	31 26.3	31 7.9	30 49.1	30 29.6	30 9.6	29 49.1	44	16	
48	12	32 19.1	32 5.3	31 50.8	31 35.7	31 20.0	31 3.7	30 46.8	30 29.4	30 11.4	29 52.9	29 33.7	29 14.1	28 54.0	48	12	
52	8	31 20.6	31 7.0	30 52.7	30 37.8	30 22.3	30 6.2	29 49.6	29 32.6	29 14.8	28 56.6	28 37.8	28 18.4	27 58.7	52	8	
15 56	4	30 22.1	30 8.6	29 54.5	29 39.8	29 24.6	29 8.6	28 52.3	28 35.5	28 18.0	28 0.1	27 41.6	27 22.7	27 3.3	3 56	4	
16 0	20 0	29 23.7	29 10.2	28 56.2	28 41.7	28 26.6	28 11.1	27 54.9	27 38.4	27 21.2	27 3.6	26 45.5	26 26.8	26 7.8	4 0	8 0	
4	19 56	28 25.1	28 11.8	27 58.0	27 43.6	27 28.8	27 13.4	26 57.5	26 41.2	26 24.3	26 7.0	25 49.1	25 30.9	25 12.2	4	7 56	
8	52	27 26.5	27 13.4	26 59.8	26 45.6	26 30.8	26 15.6	26 0.0	25 43.9	25 27.3	25 10.2	24 52.8	24 34.8	24 16.4	8	52	
12	48	26 27.9	26 14.8	26 1.4	25 47.3	25 32.9	25 17.8	25 2.4	24 46.6	24 30.2	24 13.4	23 56.3	23 38.6	23 20.6	12	48	
16	44	25 29.3	25 16.4	25 3.0	24 49.1	24 34.7	24 20.0	24 4.8	23 49.2	23 33.1	23 16.6	22 59.7	22 42.3	22 24.6	16	44	
20	40	24 30.6	24 17.8	24 4.6	23 50.8	23 36.7	23 22.1	23 7.1	22 51.7	22 35.8	22 19.6	22 3.0	21 45.9	21 28.5	20	40	
24	36	23 31.9	23 19.2	23 6.1	22 52.6	22 38.6	22 24.1	22 9.3	21 54.2	21 38.6	21 22.6	21 6.2	20 49.4	20 32.4	24	36	
28	32	22 33.2	22 20.6	22 7.6	21 54.2	21 40.4	21 26.1	21 11.5	20 56.6	20 41.2	20 25.5	20 9.3	19 52.9	19 36.1	28	32	
32	28	21 34.5	21 22.0	21 9.1	20 55.8	20 42.1	20 28.1	20 13.7	19 59.0	19 43.7	19 28.3	19 12.5	18 56.3	18 39.8	32	28	
36	24	20 35.8	20 23.4	20 10.6	19 57.4	19 43.9	19 30.0	19 15.8	19 1.3	18 46.3	18 31.0	18 15.5	17 59.6	17 43.4	36	24	
40	20	19 37.1	19 24.7	19 12.1	18 59.0	18 45.6	18 31.9	18 17.8	18 3.6	17 48.7	17 33.8	17 18.4	17 2.8	16 46.9	40	20	
44	16	18 38.3	18 26.0	18 13.5	18 0.6	17 47.3	17 33.7	17 19.8	17 5.7	16 51.2	16 36.4	16 21.4	16 5.9	15 50.3	44	16	
48	12	17 39.5	17 27.3	17 14.9	17 2.0	16 48.9	16 35.5	16 21.7	16 7.9	15 53.5	15 39.0	15 24.1	15 9.0	14 53.6	48	12	
52	8	16 40.7	16 28.6	16 16.2	16 3.5	15 50.5	15 37.2	15 23.7	15 10.0	14 55.9	14 41.5	14 26.9	14 12.0	13 56.9	52	8	
16 56	4	15 41.9	15 29.9	15 17.6	15 5.0	14 52.1	14 39.0	14 25.6	14 12.1	13 58.1	13 44.0	13 29.5	13 15.0	13 0.1	4 56	4	
17 0	19 0	14 43.1	14 31.1	14 18.9	14 6.4	13 53.7	13 40.7	13 27.4	13 14.0	13 0.3	12 46.4	12 32.2	12 17.8	12 3.3	5 0	7 0	
4	18 56	13 44.3	13 32.3	13 20.2	13 7.8	12 55.2	12 42.3	12 29.2	12 16.0	12 2.4	11 48.8	11 34.7	11 20.6	11 6.3	4	6 56	
8	52	12 45.4	12 33.5	12 21.5	12 9.2	11 56.7	11 43.9	11 31.0	11 17.9	11 4.6	10 51.0	10 37.3	10 23.4	10 9.3	8	52	
12	48	11 46.6	11 34.7	11 22.8	11 10.6	10 58.2	10 45.5	10 32.7	10 19.8	10 6.6	9 53.3	9 39.8	9 26.1	9 12.2	12	48	
16	44	10 47.7	10 36.0	10 24.1	10 11.9	9 59.6	9 47.1	9 34.4	9 21.7	9 8.7	8 55.5	8 42.2	8 28.7	8 15.1	16	44	
20	40	9 48.9	9 37.2	9 25.3	9 13.2	9 1.0	8 48.6	8 36.1	8 23.5	8 10.6	7 57.7	7 44.6	7 31.3	7 18.0	20	40	
24	36	8 50.0	8 38.4	8 26.5	8 14.5	8 2.4	7 50.1	7 37.7	7 25.4	7 12.6	6 59.8	6 46.9	6 33.9	6 20.7	24	36	
28	32	7 51.1	7 39.5	7 27.8	7 15.9	7 3.8	6 51.6	6 39.3	6 27.1	6 14.5	6 1.9	5 49.2	5 36.3	5 23.5	28	32	
32	28	6 52.2	6 40.6	6 29.0	6 17.1	6 5.2	5 53.1	5 40.9	5 28.8	5 16.4	5 4.0	4 51.4	4 38.8	4 26.1	32	28	
36	24	5 53.3	5 41.8	5 30.2	5 18.4	5 6.5	4 54.6	4 42.5	4 30.5	4 18.2	4 6.0	3 53.7	3 41.2	3 28.8	36	24	
40	20	4 54.5	4 43.0	4 31.4	4 19.7	4 7.9	3 56.0	3 44.0	3 32.1	3 20.0	3 8.0	2 55.8	2 43.6	2 31.3	40	20	
44	16	3 55.6	3 44.1	3 32.5	3 20.9	3 9.2	2 57.4	2 45.6	2 33.8	2 21.8	2 9.9	1 57.9	1 45.9	1 33.9	44	16	
48	12	2 56.7	2 45.2	2 33.7	2 22.1	2 10.4	1 58.8	1 47.1	1 35.4	1 23.6	1 11.8	1 0.0	0 48.1	0 36.3	48	12	
52	8	1 57.8	1 46.3	1 34.8	1 23.3	1 11.7	1 0.1	0 48.6	0 37.0	0 25.3	0 13.7	0 2.0	0 9.7	0 21.2	52	8	
17 56	4	0 58.9	0 47.4	0 36.0	0 24.5	0 13.0	0 1.5	0 10.1	0 21.4	0 32.9	0 44.5	0 56.0	1 7.4	1 18.8	5 56	4	
18 0	18 0	0 0.0	0 11.4	0 22.9	0 34.3	0 45.8	0 57.1	1 8.5	1 20.0	1 31.3	1 42.6	1 53.9	2 5.2	2 16.4	6 0	6 0	

DECLINATION — $\frac{\text{contrary Name to}}{\text{same Name as}}$ — LATITUDE.

Crossing this line is also equivalent to a change of sign in the altitude from + to -, or *vice versa*.

LATITUDE 12°.														
Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	°	°	°	°	°	°	°	°	°	°	°	°	h. m.
24 0	78 0.0	79 0.0	80 0.0	81 0.0	82 0.0	83 0.0	84 0.0	85 0.0	86 0.0	87 0.0	88 0.0	89 0.0	90 0.0	0 0
23 56	77 57.5	78 57.4	79 57.1	80 56.7	81 56.4	82 55.8	83 55.1	84 54.2	85 52.8	86 50.6	87 46.3	88 36.0	89 1.3	4
52	77 50.2	78 49.3	79 48.3	80 47.0	81 45.5	82 43.6	83 41.0	84 37.5	85 32.5	86 24.8	87 11.8	88 48.0	88 2.6	8
48	77 38.2	78 36.3	79 34.0	80 31.3	81 28.0	82 23.8	83 18.5	84 11.4	85 1.6	86 47.6	86 26.4	86 53.7	87 3.9	12
44	77 21.6	78 18.5	79 14.6	80 10.0	81 4.4	81 57.6	82 49.0	83 37.9	84 23.2	85 3.2	85 35.6	85 57.3	86 5.2	16
40	77 0.8	77 56.1	78 50.4	79 43.6	80 35.6	81 25.9	82 13.8	82 58.7	83 39.4	84 14.5	84 42.0	85 0.0	85 6.5	20
36	76 36.2	77 29.6	78 21.9	79 12.9	80 2.3	80 49.4	81 34.1	82 15.2	82 51.9	83 22.9	83 46.8	84 2.2	84 7.9	24
32	76 8.0	76 59.4	77 49.7	78 38.4	79 25.1	80 9.5	80 51.0	81 28.6	82 1.8	82 29.5	82 50.6	83 4.1	83 9.2	28
28	75 36.6	76 26.3	77 14.3	78 0.6	78 44.7	79 26.4	80 4.9	80 39.7	81 10.0	81 34.9	81 53.8	82 5.8	82 10.5	32
24	75 2.4	75 50.0	76 36.0	77 20.1	78 1.7	78 40.9	79 16.8	79 48.9	80 16.7	80 39.4	80 56.5	81 7.5	81 11.8	36
20	74 25.6	75 11.4	75 55.2	76 37.1	77 16.4	77 53.3	78 26.9	78 56.6	79 22.4	79 43.2	79 59.0	80 9.0	80 13.1	40
16	73 46.5	74 30.5	75 12.3	75 52.3	76 29.4	77 4.0	77 35.6	78 3.5	78 27.3	78 46.8	79 1.2	79 10.5	79 14.5	44
12	73 5.5	73 47.6	74 27.6	75 5.6	75 40.8	76 13.5	76 43.4	77 9.7	77 31.8	77 49.7	78 3.2	78 12.0	78 15.8	48
8	72 22.7	73 3.1	73 41.4	74 17.5	74 51.1	75 22.0	75 50.0	76 14.6	76 35.6	76 52.4	77 4.9	77 13.3	77 17.1	52
4	71 38.4	72 17.1	72 53.7	73 28.3	74 0.2	74 29.6	74 56.1	75 19.1	75 38.9	75 54.8	76 6.8	76 14.7	76 18.4	0 56
23 0	70 52.6	71 29.9	72 5.0	72 37.9	73 8.3	73 36.3	74 1.6	74 23.4	74 42.0	74 56.9	75 8.5	75 16.1	75 19.8	1 0
22 56	70 5.7	70 41.4	71 15.3	71 46.8	72 15.7	72 42.4	73 6.4	73 27.2	73 44.9	73 59.1	74 10.2	74 17.6	74 21.2	4
52	69 17.6	69 52.1	70 24.5	70 54.7	71 22.4	71 47.9	72 10.9	72 30.6	72 47.7	73 1.0	73 11.7	73 18.8	73 22.5	8
48	68 28.6	69 1.7	69 33.0	70 2.0	70 28.5	70 53.0	71 14.9	71 33.8	71 50.1	72 3.2	72 13.3	72 20.2	72 23.7	12
44	67 38.8	68 10.7	68 40.8	69 8.6	69 34.2	69 57.6	70 18.6	70 36.7	70 52.4	71 5.0	71 14.8	71 21.4	71 25.1	16
40	66 48.2	67 19.0	67 48.0	68 14.8	68 39.4	69 1.8	69 22.1	69 39.5	69 54.7	70 6.7	70 16.2	70 22.9	70 26.4	20
36	65 56.9	66 26.6	66 54.7	67 20.5	67 44.1	68 5.7	68 25.4	68 42.2	68 56.7	69 8.4	69 17.6	69 24.2	69 27.9	24
32	65 5.0	65 33.8	66 0.8	66 25.8	66 48.6	67 9.5	67 28.4	67 44.6	67 58.7	68 10.6	68 19.0	68 25.5	68 29.2	28
28	64 12.5	64 40.4	65 6.5	65 30.7	65 52.8	66 13.0	66 31.2	66 46.9	67 0.6	67 11.6	67 20.4	67 26.8	67 30.5	32
24	63 19.6	63 46.6	64 11.9	64 35.3	64 56.7	65 16.3	65 33.9	65 49.1	66 2.4	66 13.2	66 21.7	66 28.1	66 31.9	36
20	62 26.1	62 52.3	63 17.0	63 39.6	64 0.4	64 19.3	64 36.4	64 51.3	65 4.2	65 14.7	65 23.1	65 29.4	65 33.2	40
16	61 32.4	61 57.8	62 21.7	62 43.8	63 3.8	63 22.2	63 38.9	63 53.3	64 5.9	64 16.1	64 24.5	64 30.7	64 34.7	44
12	60 38.2	61 2.9	61 26.1	61 47.5	62 7.1	62 24.9	62 41.2	62 55.2	63 7.5	63 17.6	63 25.7	63 32.0	63 36.0	48
8	59 43.7	60 7.8	60 30.2	60 51.1	61 10.1	61 27.6	61 43.3	61 57.1	62 9.1	62 19.0	62 27.2	62 33.3	62 37.5	52
4	58 48.9	59 12.3	59 34.3	59 54.5	60 13.1	60 30.0	60 45.5	60 58.9	61 10.7	61 20.5	61 28.4	61 34.7	61 38.7	1 56
22 0	57 53.9	58 16.7	58 38.0	58 57.8	59 15.8	59 32.4	59 47.5	60 0.6	60 12.2	60 21.8	60 29.8	60 35.9	60 40.2	2 0
21 56	56 58.5	57 20.7	57 41.7	58 0.9	58 18.5	58 34.7	58 49.4	59 2.4	59 13.7	59 23.2	59 31.0	59 37.3	59 41.6	4
52	56 2.9	56 24.7	56 45.0	57 3.9	57 21.1	57 36.9	57 51.3	58 4.0	58 15.2	58 24.6	58 32.4	58 38.6	58 43.0	8
48	55 7.1	55 28.3	55 48.2	56 6.6	56 23.5	56 39.1	56 53.2	57 5.6	57 16.6	57 26.0	57 33.7	57 39.9	57 44.5	12
44	54 11.2	54 31.9	54 51.3	55 9.3	55 25.8	55 41.1	55 55.0	56 7.2	56 18.1	56 27.2	56 35.0	56 41.3	56 45.8	16
40	53 15.0	53 35.2	53 54.3	54 11.9	54 28.1	54 43.1	54 56.7	55 8.8	55 19.5	55 28.6	55 36.3	55 42.6	55 47.3	20
36	52 18.7	52 38.5	52 57.1	53 14.4	53 30.3	53 44.9	53 58.4	54 10.3	54 20.9	54 30.0	54 37.6	54 44.0	54 48.7	24
32	51 22.1	51 41.6	51 59.8	52 16.8	52 32.4	52 46.9	53 0.0	53 11.8	53 22.4	53 31.3	53 39.0	53 45.3	53 50.2	28
28	50 25.5	50 44.5	51 2.5	51 19.0	51 34.4	51 48.6	52 1.7	52 13.3	52 23.7	52 32.6	52 40.3	52 46.7	52 51.6	32
24	49 28.7	49 47.4	50 4.9	50 21.3	50 36.4	50 50.4	51 3.3	51 14.7	51 25.0	51 33.9	51 41.6	51 48.1	51 53.1	36
20	48 31.8	48 50.1	49 7.3	49 23.4	49 38.3	49 52.1	50 4.8	50 16.2	50 26.4	50 35.2	50 42.9	50 49.5	50 54.6	40
16	47 34.8	47 52.8	48 9.7	48 25.6	48 40.2	48 53.8	49 6.4	49 17.5	49 27.7	49 36.6	49 44.3	49 50.8	49 56.1	44
12	46 37.6	46 55.3	47 12.1	47 27.6	47 42.0	47 55.4	48 7.8	48 18.9	48 29.0	48 37.9	48 45.6	48 52.2	48 57.5	48
8	45 40.4	45 57.8	46 14.2	46 29.6	46 43.7	46 57.0	47 9.3	47 20.3	47 30.4	47 39.1	47 47.0	47 53.6	47 59.1	52
4	44 43.1	45 0.2	45 16.4	45 31.4	45 45.5	45 58.6	46 10.8	46 21.7	46 31.7	46 40.5	46 48.3	46 55.0	47 0.6	2 56
21 0	43 45.7	44 2.5	44 18.4	44 33.3	44 47.1	45 0.2	45 12.2	45 23.0	45 33.0	45 41.8	45 49.6	45 56.4	46 2.1	3 0

LATITUDE 12°.													
Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	89 0	0	88 0	0	87 0	0	86 0	0	85 0	0	84 0	0	0 0
23 56	88 36	2	87 46	5	86 50	8	85 53	0	84 54	4	83 55	4	4
52	87 48	4	86 12	4	85 25	5	84 33	2	83 41	8	82 44	4	8
48	86 54	3	85 27	5	84 48	9	83 53	2	82 55	5	81 29	9	12
44	85 58	1	85 37	1	84 53	5	83 40	5	82 51	8	81 7	8	16
40	85 1	0	84 44	0	83 17	2	82 42	7	81 30	1	80 40	2	20
36	84 3	4	83 49	3	82 26	4	81 20	1	80 39	5	79 19	4	24
32	83 5	6	82 53	5	81 33	7	80 34	7	79 33	1	78 46	8	28
28	82 7	6	81 57	5	80 39	8	79 46	9	78 54	5	77 25	2	32
24	81 9	4	81 0	3	80 44	9	79 57	3	78 51	8	77 32	5	36
20	80 11	2	80 3	1	79 49	6	79 30	5	78 37	9	77 30	2	40
16	79 12	8	79 5	7	78 53	6	78 36	4	77 48	2	76 45	2	44
12	78 14	6	78 8	0	77 41	6	77 21	4	76 57	1	75 24	6	48
8	77 16	2	77 10	6	76 46	2	76 27	9	75 5	7	74 38	5	52
4	76 17	9	76 12	9	75 50	7	75 33	6	74 49	0	73 51	4	0 56
23 0	75 19	4	75 15	1	74 6	7	73 38	9	72 19	6	71 57	2	1 0
22 56	74 21	0	74 17	0	73 58	5	73 44	0	72 41	0	71 44	8	4
52	73 22	6	73 19	0	72 12	7	71 48	6	70 49	5	70 26	3	8
48	72 24	2	72 21	2	71 14	9	70 52	9	70 33	6	69 38	7	12
44	71 25	7	71 23	2	70 17	4	70 57	0	70 42	3	69 42	5	16
40	70 27	3	70 25	0	69 19	9	69 11	8	68 47	2	68 50	8	20
36	69 28	7	69 26	8	68 22	6	68 14	7	67 51	8	67 36	2	24
32	68 30	4	68 28	6	67 24	5	67 17	5	66 56	4	66 44	9	28
28	67 31	9	67 30	5	66 26	8	66 20	4	65 11	8	65 53	0	32
24	66 33	4	66 32	4	65 29	1	65 23	2	64 15	1	64 55	4	36
20	65 35	0	65 34	2	64 31	3	64 25	8	63 18	5	63 58	4	40
16	64 36	4	64 36	0	63 33	4	63 28	6	62 21	3	62 56	1	44
12	63 38	0	63 37	7	62 35	6	62 31	1	61 24	7	62 52	2	48
8	62 39	5	62 39	6	61 37	6	61 33	6	60 27	9	61 58	0	52
4	61 41	1	61 41	3	60 39	8	60 36	2	59 30	7	60 51	5	1 56
22 0	60 42	6	60 43	1	59 41	9	59 38	7	58 36	7	57 35	4	2 0
21 56	59 44	2	59 44	9	58 43	9	58 41	1	57 36	5	56 35	3	4
52	58 45	8	58 46	7	57 46	0	57 43	5	56 39	4	55 38	3	8
48	57 47	3	57 48	5	56 48	0	56 45	9	55 42	2	54 41	5	12
44	56 48	9	56 50	2	55 50	1	55 48	3	54 45	0	53 44	5	16
40	55 50	4	55 52	0	54 52	5	54 50	7	53 47	5	52 46	4	20
36	54 52	1	54 53	8	53 54	3	53 52	0	52 49	4	51 48	3	24
32	53 53	7	53 55	7	52 56	2	52 54	3	51 51	3	50 50	2	28
28	52 55	3	52 57	4	51 58	3	51 57	2	50 54	2	49 53	1	32
24	51 56	8	51 59	2	50 59	0	50 58	5	49 55	1	48 54	0	36
20	50 58	5	51 0	5	49 59	5	49 58	5	48 55	5	47 54	4	40
16	50 0	1	50 2	9	49 50	4	49 49	5	48 46	4	47 45	3	44
12	49 1	8	49 4	7	48 49	6	48 48	4	47 45	2	46 44	1	48
8	48 3	4	48 6	6	47 48	8	47 47	4	46 44	1	45 43	0	52
4	47 5	1	47 8	4	46 47	11	46 47	11	45 44	7	44 43	6	2 56
21 0	46 6	7	46 10	2	45 12	6	45 14	0	44 16	3	43 15	5	3 0

LATITUDE 12°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
21 0	43 45.7	44 2.5	44 18.4	44 33.3	44 47.1	45 0.2	45 12.2	45 23.0	45 33.0	45 41.8	45 49.6	45 56.4	46 2.1	3 0	
20 56	42 48.1	43 4.8	43 20.4	43 35.1	43 48.8	44 1.6	44 13.6	44 24.4	44 34.4	44 43.1	44 51.0	44 57.9	45 3.6	4	
52	41 50.6	42 6.9	42 22.4	42 36.9	42 50.4	43 3.2	43 14.9	43 25.8	43 35.6	43 44.5	43 52.3	43 59.3	44 5.2	8	
48	40 52.9	41 9.0	41 24.3	41 38.7	41 52.0	42 4.6	42 16.4	42 27.0	42 37.0	42 45.7	42 53.7	43 0.7	43 6.7	12	
44	39 55.2	40 11.1	40 26.2	40 40.3	40 53.6	41 6.1	41 17.7	41 28.4	41 38.2	41 47.1	41 55.0	42 2.2	42 8.2	16	
40	38 57.4	39 13.1	39 28.0	39 42.0	39 55.1	40 7.5	40 19.1	40 29.7	40 39.6	40 48.4	40 56.5	41 3.6	41 9.9	20	
36	37 59.6	38 15.0	38 29.8	38 43.6	38 56.6	39 8.9	39 20.5	39 31.0	39 40.8	39 49.8	39 57.8	40 5.2	40 11.4	24	
32	37 1.7	37 17.0	37 31.5	37 45.2	37 58.1	38 10.4	38 21.8	38 32.4	38 42.2	38 51.0	38 59.3	39 6.6	39 13.1	28	
28	36 3.7	36 18.8	36 33.2	36 46.8	36 59.6	37 11.7	37 23.2	37 33.6	37 43.5	37 52.4	38 0.6	38 8.2	38 14.7	32	
24	35 5.7	35 20.6	35 34.9	35 48.4	36 1.0	36 13.1	36 24.4	36 35.0	36 44.9	36 53.8	37 2.1	37 9.6	37 16.3	36	
20	34 7.7	34 22.4	34 36.5	34 49.9	35 2.5	35 14.4	35 25.8	35 36.3	35 46.1	35 55.2	36 3.5	36 11.2	36 17.9	40	
16	33 9.6	33 24.2	33 38.1	33 51.4	34 3.8	34 15.8	34 27.1	34 37.6	34 47.5	34 56.5	35 5.0	35 12.7	35 19.6	44	
12	32 11.4	32 25.9	32 39.7	32 52.8	33 5.3	33 17.2	33 28.4	33 38.9	33 48.8	33 57.9	34 6.4	34 14.2	34 21.3	48	
8	31 13.3	31 27.5	31 41.3	31 54.3	32 6.7	32 18.5	32 29.8	32 40.2	32 50.2	32 59.3	33 7.8	33 15.8	33 23.0	52	
4	30 15.1	30 29.2	30 42.8	30 55.8	31 8.0	31 19.9	31 31.1	31 41.5	31 51.5	32 0.7	32 9.3	32 17.3	32 24.7	3 56	
20 0	29 16.8	29 30.8	29 44.3	29 57.2	30 9.5	30 21.2	30 32.4	30 42.8	30 52.8	31 2.1	31 10.8	31 19.0	31 26.4	4 0	
19 56	28 18.5	28 32.4	28 45.8	28 58.6	29 10.8	29 22.5	29 33.7	29 44.2	29 54.2	30 3.5	30 12.4	30 20.6	30 28.1	4	
52	27 20.1	27 33.9	27 47.3	28 0.0	28 12.2	28 23.8	28 35.0	28 45.5	28 55.6	29 5.0	29 13.8	29 22.2	29 29.9	8	
48	26 21.9	26 35.5	26 48.7	27 1.4	27 13.4	27 25.1	27 36.3	27 46.8	27 57.0	28 6.4	28 15.4	28 23.8	28 31.7	12	
44	25 23.4	25 37.0	25 50.2	26 2.7	26 14.8	26 26.4	26 37.6	26 48.2	26 58.3	27 7.8	27 16.9	27 25.5	27 33.4	16	
40	24 25.1	24 38.6	24 51.6	25 4.1	25 16.1	25 27.7	25 39.0	25 49.5	25 59.7	26 9.3	26 18.5	26 27.1	26 35.2	20	
36	23 26.6	23 40.0	23 53.0	24 5.5	24 17.5	24 29.0	24 40.2	24 50.9	25 1.1	25 10.8	25 20.0	25 28.8	25 37.1	24	
32	22 28.1	22 41.5	22 54.4	23 6.8	23 18.8	23 30.4	23 41.6	23 52.2	24 2.5	24 12.3	24 21.6	24 30.6	24 38.9	28	
28	21 29.7	21 42.9	21 55.8	22 8.2	22 20.1	22 31.7	22 42.9	22 53.6	23 3.9	23 13.8	23 23.2	23 32.3	23 40.8	32	
24	20 31.2	20 44.3	20 57.1	21 9.5	21 21.4	21 33.0	21 44.2	21 55.0	22 5.4	22 15.3	22 24.9	22 34.0	22 42.7	36	
20	19 32.7	19 45.8	19 58.5	20 10.8	20 22.7	20 34.3	20 45.6	20 56.3	21 6.9	21 16.8	21 26.5	21 35.8	21 44.6	40	
16	18 34.2	18 47.2	18 59.9	19 12.2	19 24.0	19 35.6	19 46.9	19 57.8	20 8.3	20 18.4	20 28.1	20 37.6	20 46.5	44	
12	17 35.6	17 48.6	18 1.2	18 13.5	18 25.3	18 36.9	18 48.3	18 59.2	19 9.8	19 20.0	19 29.9	19 39.4	19 48.5	48	
8	16 37.1	16 49.9	17 2.5	17 14.7	17 26.6	17 38.3	17 49.6	18 0.6	18 11.3	18 21.6	18 31.5	18 41.2	18 50.5	52	
4	15 38.5	15 51.3	16 3.8	16 16.1	16 27.9	16 39.6	16 51.0	17 2.0	17 12.8	17 23.1	17 33.3	17 43.0	17 52.5	4 56	
19 0	14 39.9	14 52.6	15 5.2	15 17.4	15 29.3	15 41.0	15 52.4	16 3.5	16 14.3	16 24.8	16 35.0	16 45.0	16 54.5	5 0	
18 56	13 41.3	13 54.0	14 6.5	14 18.7	14 30.6	14 42.3	14 53.8	15 4.9	15 15.9	15 26.4	15 36.8	15 46.8	15 56.6	4	
52	12 42.7	12 55.3	13 7.8	13 20.0	13 31.9	13 43.7	13 55.2	14 6.4	14 17.4	14 28.1	14 38.5	14 48.8	14 58.7	8	
48	11 44.0	11 56.6	12 9.1	12 21.3	12 33.3	12 45.0	12 56.6	13 7.9	13 19.0	13 29.7	13 40.3	13 50.7	14 0.8	12	
44	10 45.4	10 58.0	11 10.4	11 22.6	11 34.6	11 46.4	11 58.0	12 9.4	12 20.6	12 31.4	12 42.2	12 52.7	13 2.9	16	
40	9 46.8	9 59.4	10 11.8	10 23.9	10 35.9	10 47.8	10 59.5	11 10.9	11 22.2	11 33.2	11 44.0	11 54.7	12 5.1	20	
36	8 48.1	9 0.7	9 13.1	9 25.3	9 37.2	9 49.2	10 0.9	10 12.4	10 23.8	10 34.9	10 45.9	10 56.7	11 7.3	24	
32	7 49.5	8 2.0	8 14.4	8 26.6	8 38.6	8 50.5	9 2.4	9 14.0	9 25.5	9 36.7	9 47.8	9 58.8	10 9.5	28	
28	6 50.8	7 3.3	7 15.7	7 28.0	7 40.0	7 52.0	8 3.9	8 15.5	8 27.1	8 38.5	8 49.8	9 0.9	9 11.8	32	
24	5 52.1	6 4.6	6 17.0	6 29.3	6 41.4	6 53.4	7 5.4	7 17.1	7 28.8	7 40.3	7 51.7	8 3.0	8 14.1	36	
20	4 53.4	5 5.9	5 18.3	5 30.6	5 42.8	5 54.9	6 6.9	6 18.7	6 30.5	6 42.1	6 53.7	7 5.2	7 16.4	40	
16	3 54.8	4 7.2	4 19.7	4 32.0	4 44.2	4 56.3	5 8.4	5 20.4	5 32.3	5 44.0	5 55.7	6 7.3	6 18.8	44	
12	2 56.1	3 8.5	3 21.0	3 33.3	3 45.5	3 57.8	4 10.0	4 22.0	4 34.1	4 45.9	4 57.7	5 9.5	5 21.2	48	
8	1 57.4	2 9.8	2 22.3	2 34.7	2 46.9	2 59.3	3 11.5	3 23.7	3 35.9	3 47.8	3 59.8	4 11.8	4 23.6	52	
4	0 58.7	1 11.2	1 23.6	1 36.1	1 48.4	2 0.7	2 13.1	2 25.4	2 37.7	2 49.8	3 1.9	3 14.1	3 26.1	5 56	
18 0	0 0.0	0 12.5	0 24.9	0 37.4	0 49.9	1 2.3	1 14.7	1 27.1	1 39.5	1 51.8	2 4.1	2 16.4	2 28.6	6 0	

LATITUDE 12°.													
Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
21 0	46 6.7	46 10.2	46 12.6	46 14.0	46 14.3	46 13.4	46 11.5	46 8.5	46 4.4	45 59.2	45 52.9	45 45.6	3 0
56	45 8.4	45 12.0	45 14.7	45 16.4	45 16.9	45 16.4	45 14.8	45 12.2	45 8.5	45 3.8	44 58.0	44 51.2	4
52	44 10.1	44 13.9	44 16.9	44 18.6	44 19.6	44 19.3	44 18.2	44 15.9	44 12.6	44 8.4	44 3.0	43 56.9	8
48	43 11.8	43 15.8	43 19.0	43 21.0	43 22.2	43 22.3	43 21.4	43 19.6	43 16.7	43 12.9	43 8.0	43 2.3	12
44	42 13.5	42 17.7	42 21.1	42 23.4	42 24.8	42 25.2	42 24.7	42 23.2	42 20.8	42 17.4	42 13.0	42 7.8	16
40	41 15.2	41 19.7	41 23.2	41 25.7	41 27.4	41 28.1	41 28.0	41 26.8	41 24.9	41 21.9	41 17.9	41 13.2	20
36	40 17.0	40 21.5	40 25.3	40 28.1	40 30.1	40 31.1	40 31.2	40 30.5	40 28.8	40 26.3	40 22.9	40 18.6	24
32	39 18.7	39 23.5	39 27.4	39 30.5	39 32.7	39 34.0	39 34.6	39 34.1	39 32.9	39 30.8	39 27.7	39 23.9	28
28	38 20.5	38 25.4	38 29.6	38 32.8	38 35.3	38 37.0	38 37.8	38 37.8	38 36.9	38 35.2	38 32.5	38 29.2	32
24	37 22.2	37 27.4	37 31.7	37 35.2	37 38.0	37 39.9	37 41.1	37 41.4	37 40.9	37 39.5	37 37.4	37 34.5	36
20	36 24.1	36 29.3	36 33.9	36 37.7	36 40.7	36 42.8	36 44.3	36 45.0	36 44.8	36 43.9	36 42.2	36 39.8	40
16	35 25.9	35 31.3	35 36.1	35 40.1	35 43.3	35 45.8	35 47.6	35 48.6	35 48.8	35 48.3	35 47.0	35 45.0	44
12	34 27.7	34 33.3	34 38.3	34 42.5	34 46.1	34 48.8	34 50.9	34 52.2	34 52.8	34 52.7	34 51.8	34 50.3	48
8	33 29.6	33 35.3	33 40.5	33 45.0	33 48.7	33 51.8	33 54.1	33 55.8	33 56.8	33 57.1	33 56.6	33 55.5	52
4	32 31.4	32 37.4	32 42.8	32 47.4	32 51.5	32 54.7	32 57.5	32 59.5	33 0.8	33 1.4	33 1.4	33 0.7	3 56
20 0	31 33.3	31 39.4	31 45.0	31 49.9	31 54.2	31 57.8	32 0.8	32 3.2	32 4.8	32 5.9	32 6.1	32 5.8	4 0
19 56	30 35.2	30 41.5	30 47.3	30 52.4	30 57.0	31 0.8	31 4.2	31 6.8	31 8.8	31 10.2	31 10.9	31 11.0	4
52	29 37.1	29 43.5	29 49.6	29 54.9	29 59.8	30 3.9	30 7.4	30 10.5	30 12.8	30 14.6	30 15.6	30 16.2	8
48	28 39.0	28 45.7	28 51.9	28 57.5	29 2.6	29 7.0	29 10.9	29 14.1	29 16.8	29 18.9	29 20.5	29 21.4	12
44	27 40.9	27 47.8	27 54.2	28 0.0	28 5.4	28 10.0	28 14.2	28 17.8	28 20.8	28 23.4	28 25.2	28 26.6	16
40	26 42.9	26 50.0	26 56.6	27 2.6	27 8.2	27 13.1	27 17.6	27 21.5	27 24.9	27 27.7	27 30.0	27 31.8	20
36	25 44.9	25 52.2	25 59.0	26 5.2	26 11.0	26 16.2	26 21.0	26 25.3	26 29.0	26 32.2	26 34.8	26 37.0	24
32	24 46.9	24 54.4	25 1.4	25 7.9	25 13.9	25 19.4	25 24.5	25 29.0	25 33.1	25 36.7	25 39.6	25 42.2	28
28	23 49.0	23 56.6	24 3.8	24 10.5	24 16.8	24 22.6	24 27.9	24 32.8	24 37.2	24 41.1	24 44.5	24 47.5	32
24	22 51.0	22 58.8	23 6.2	23 13.2	23 19.7	23 25.8	23 31.4	23 36.6	23 41.3	23 45.6	23 49.3	23 52.8	36
20	21 53.1	22 1.1	22 8.7	22 15.9	22 22.7	22 29.0	22 35.0	22 40.4	22 45.4	22 50.1	22 54.2	22 58.0	40
16	20 55.2	21 3.4	21 11.2	21 18.6	21 25.7	21 32.3	21 38.5	21 44.3	21 49.6	21 54.6	21 59.1	22 3.3	44
12	19 57.3	20 5.7	20 13.7	20 21.4	20 28.7	20 35.5	20 42.0	20 48.1	20 53.9	20 59.1	21 4.1	21 8.6	48
8	18 59.5	19 8.0	19 16.3	19 24.2	19 31.7	19 38.8	19 45.6	19 52.1	19 58.1	20 3.8	20 9.0	20 13.9	52
4	18 1.6	18 10.4	18 18.9	18 27.0	18 34.8	18 42.2	18 49.3	18 56.0	19 2.4	19 8.4	19 14.0	19 19.3	4 56
19 0	17 3.9	17 12.8	17 21.5	17 29.8	17 37.9	17 45.6	17 52.9	18 0.0	18 6.7	18 13.0	18 19.0	18 24.7	5 0
18 56	16 6.1	16 15.3	16 24.1	16 32.7	16 41.0	16 48.9	16 56.6	17 4.0	17 11.0	17 17.7	17 24.0	17 30.1	4
52	15 8.4	15 17.7	15 26.8	15 35.6	15 44.1	15 52.4	16 0.4	16 8.0	16 15.4	16 22.4	16 29.1	16 35.6	8
48	14 10.6	14 20.2	14 29.5	14 38.6	14 47.4	14 55.8	15 4.1	15 12.1	15 19.8	15 27.2	15 34.3	15 41.1	12
44	13 13.0	13 22.7	13 32.3	13 41.5	13 50.6	13 59.4	14 7.9	14 16.2	14 24.2	14 32.0	14 39.5	14 46.7	16
40	12 15.3	12 25.3	12 35.1	12 44.6	12 53.9	13 2.9	13 11.8	13 20.3	13 28.7	13 36.9	13 44.7	13 52.3	20
36	11 17.7	11 27.9	11 37.9	11 47.6	11 57.2	12 6.5	12 15.7	12 24.5	12 33.2	12 41.7	12 49.9	12 57.9	24
32	10 20.2	10 30.5	10 40.7	10 50.7	11 0.6	11 10.2	11 19.6	11 28.8	11 37.8	11 46.6	11 55.2	12 3.6	28
28	9 22.6	9 33.2	9 43.6	9 53.9	10 4.0	10 13.8	10 23.6	10 33.1	10 42.5	10 51.6	11 0.5	11 9.3	32
24	8 25.1	8 35.9	8 46.6	8 57.0	9 7.4	9 17.6	9 27.6	9 37.5	9 47.1	9 56.7	10 5.9	10 15.1	36
20	7 27.6	7 38.6	7 49.5	8 0.2	8 10.9	8 21.3	8 31.7	8 41.9	8 51.9	9 1.7	9 11.4	9 20.9	40
16	6 30.2	6 41.4	6 52.6	7 3.5	7 14.5	7 25.2	7 35.8	7 46.3	7 56.7	8 6.9	8 16.9	8 26.9	44
12	5 32.8	5 44.2	5 55.6	6 6.9	6 18.1	6 29.1	6 40.0	6 50.8	7 1.5	7 12.1	7 22.5	7 32.8	48
8	4 35.4	4 47.1	4 58.7	5 10.2	5 21.7	5 33.0	5 44.2	5 55.4	6 6.4	6 17.4	6 28.1	6 38.8	52
4	3 38.1	3 50.0	4 1.9	4 13.6	4 25.3	4 37.0	4 48.5	5 0.0	5 11.4	5 22.6	5 33.8	5 44.9	5 56
18 0	2 40.8	2 53.0	3 5.1	3 17.1	3 29.1	3 41.0	3 52.9	4 4.7	4 16.4	4 28.0	4 39.6	4 51.1	6 0

LATITUDE 12°.														
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.
24 0	78 0 0	77 0 0	76 0 0	75 0 0	74 0 0	73 0 0	72 0 0	71 0 0	70 0 0	69 0 0	68 0 0	67 0 0	66 0 0	0 0
23 56	77 57 5	76 57 7	75 57 9	74 58 0	73 58 0	72 58 3	71 58 4	70 58 3	69 58 5	68 58 5	67 58 6	66 58 7	65 58 8	4
52	77 50 2	76 50 9	75 51 6	74 52 1	73 52 6	72 53 0	71 53 6	70 53 9	69 54 2	68 54 3	67 54 5	66 54 9	65 55 2	8
48	77 38 2	76 39 8	75 41 2	74 42 4	73 43 3	72 44 4	71 45 4	70 46 0	69 46 9	68 47 2	67 47 8	66 48 4	65 49 0	12
44	77 21 6	76 24 4	75 26 9	74 28 9	73 30 6	72 32 3	71 34 1	70 35 2	69 36 7	68 37 6	67 38 5	66 39 5	65 40 4	16
40	77 0 8	76 5 0	75 8 9	74 11 9	73 14 6	72 17 2	71 19 7	70 21 6	69 23 5	68 25 2	67 26 7	66 28 1	65 29 5	20
36	76 36 2	75 42 0	74 47 3	73 51 7	72 55 2	71 58 8	71 2 5	70 5 1	69 7 8	68 10 0	67 12 3	66 14 4	65 16 3	24
32	76 8 0	75 15 5	74 22 4	73 28 2	72 32 9	71 37 6	70 42 2	69 46 0	68 49 5	67 52 5	66 55 4	65 58 4	65 0 9	28
28	75 36 6	74 46 0	73 54 3	73 1 6	72 7 9	71 13 6	70 19 3	69 24 1	68 28 7	67 32 5	66 36 3	65 39 9	64 43 3	32
24	75 2 4	74 13 5	73 23 5	72 32 2	71 40 0	70 47 2	69 54 0	68 59 8	68 5 4	67 10 4	66 15 0	65 19 3	64 23 4	36
20	74 25 6	73 38 5	72 50 1	72 0 5	71 9 6	70 18 2	69 26 4	68 33 2	67 39 9	66 45 9	65 51 5	64 56 8	64 1 6	40
16	73 46 5	73 1 2	72 14 6	71 26 4	70 37 0	69 46 9	68 56 4	68 4 6	67 12 3	66 19 3	65 25 9	64 32 2	63 38 0	44
12	73 5 5	72 21 8	71 36 9	70 50 3	70 3 7	2 3 69	13 6 68	24 3 67	33 9 66	42 8 65	50 8 64	58 4 64	5 7 63	48
8	72 22 7	71 40 7	70 57 1	70 12 3	69 25 8	68 38 4	67 50 5	67 1 1	66 11 3	65 20 5	64 29 2	63 37 3	62 45 0	52
4	71 38 4	70 57 9	70 15 8	69 32 4	68 47 5	68 1 5	67 14 7	66 26 7	65 38 0	64 48 4	63 58 2	63 7 3	62 15 9	0 56
23 0	70 52 6	70 13 7	69 33 2	68 51 0	68 7 5	67 22 9	66 37 5	65 50 6	65 3 2	64 14 5	63 25 5	62 35 7	61 45 4	1 0
22 56	70 5 7	69 28 1	68 49 2	68 8 4	67 26 1	66 42 8	65 58 7	65 13 2	64 26 7	63 39 3	62 51 2	62 2 7	61 13 3	4
52	69 17 6	68 41 5	68 3 8	67 24 4	66 43 4	66 1 4	65 18 5	64 34 1	63 49 0	63 2 5	62 15 7	61 28 0	60 39 8	8
48	68 28 6	67 53 7	67 17 4	66 39 3	65 59 5	65 18 8	64 37 0	63 53 8	63 9 7	62 24 6	61 38 7	60 52 1	60 4 7	12
44	67 38 8	67 5 2	66 29 9	65 53 0	65 14 6	64 34 9	63 54 3	63 12 3	62 29 4	61 45 4	61 0 6	60 14 9	59 28 5	16
40	66 48 2	66 15 7	65 41 6	65 5 9	64 28 5	63 50 0	63 10 6	62 29 7	61 47 9	61 4 9	60 21 1	59 36 6	58 51 2	20
36	65 56 9	65 25 4	64 52 6	64 17 9	63 41 6	63 4 2	62 25 9	61 46 1	61 5 3	60 23 3	59 40 6	58 57 1	58 12 8	24
32	65 5 0	64 34 6	64 2 6	63 29 0	62 53 8	62 17 5	61 40 3	61 1 5	60 21 7	59 40 3	58 59 1	58 16 6	57 33 1	28
28	64 12 5	63 43 0	63 12 1	62 39 5	62 5 4	61 30 1	60 53 8	60 16 0	59 37 3	58 57 4	58 16 6	57 35 0	56 52 6	32
24	63 19 6	62 51 0	62 20 9	61 49 4	61 16 2	60 41 9	60 6 5	59 29 7	58 52 0	58 13 0	57 33 2	56 52 6	56 11 0	36
20	62 26 1	61 58 4	61 29 3	60 58 6	60 26 3	59 52 9	59 18 5	58 42 7	58 5 9	57 27 8	56 49 0	56 9 3	55 28 6	40
16	61 32 4	61 5 5	60 37 2	60 7 3	59 35 8	59 3 4	58 29 9	57 55 0	57 19 0	56 41 9	56 4 0	55 25 1	54 45 5	44
12	60 38 2	60 12 0	59 44 6	59 15 4	58 44 9	58 13 2	57 40 6	57 6 5	56 31 5	55 55 3	55 18 2	54 40 3	54 1 4	48
8	59 43 7	59 18 3	58 51 4	58 23 2	57 53 4	57 22 6	56 50 7	56 17 5	55 43 4	55 8 0	54 31 8	53 54 6	53 16 8	52
4	58 48 9	58 24 2	57 57 9	57 30 4	57 1 5	56 31 4	56 0 4	55 28 0	54 54 6	54 20 1	53 44 7	53 8 5	52 31 2	1 56
22 0	57 53 9	57 29 7	57 4 3	56 37 3	56 9 1	55 39 8	55 9 5	54 37 9	54 5 3	53 31 6	52 57 1	52 21 5	51 45 3	2 0
21 56	56 58 5	56 35 0	56 10 2	55 44 0	55 16 4	54 47 7	54 18 2	53 47 4	53 15 6	52 42 6	52 8 9	51 34 2	50 58 6	4
52	56 2 9	55 40 0	55 15 7	54 50 2	54 23 3	53 55 3	53 26 5	52 56 3	52 25 3	51 53 0	51 20 0	50 46 1	50 11 3	8
48	55 7 1	54 44 7	54 21 1	53 56 1	53 29 8	53 2 6	52 34 4	52 4 9	51 34 5	51 3 1	50 30 7	49 57 6	49 23 6	12
44	54 11 2	53 49 3	53 26 1	53 1 7	52 36 1	52 9 4	51 42 0	51 13 1	50 43 4	50 12 6	49 41 0	49 8 6	48 35 3	16
40	53 15 0	52 53 5	52 31 0	52 7 2	51 42 0	51 16 0	50 49 1	50 21 0	49 51 8	49 21 7	48 50 8	48 19 1	47 46 5	20
36	52 18 7	51 57 6	51 35 6	51 12 3	50 47 8	50 22 2	49 56 0	49 28 4	49 0 4	48 30 5	48 0 2	47 29 2	46 57 3	24
32	51 22 1	51 1 6	50 40 0	50 17 2	49 53 2	49 28 3	49 2 5	48 35 5	48 7 8	47 38 9	47 9 3	46 38 8	46 7 6	28
28	50 25 5	50 5 3	49 44 2	49 21 8	48 58 4	48 34 0	48 8 8	47 42 4	47 15 2	46 47 0	46 18 0	45 48 2	45 17 6	32
24	49 28 7	49 9 0	48 48 2	48 26 3	48 3 3	47 39 4	47 14 8	46 49 0	46 22 3	45 54 7	45 26 3	44 57 1	44 27 2	36
20	48 31 8	48 12 4	47 52 0	47 30 6	47 8 1	46 44 7	46 20 6	45 55 3	45 29 2	45 2 1	44 34 3	44 5 8	43 36 4	40
16	47 34 8	47 15 8	46 55 8	46 34 8	46 12 7	45 49 8	45 26 1	45 1 3	44 35 8	44 9 3	43 42 0	43 14 0	42 45 3	44
12	46 37 6	46 18 9	45 59 3	45 38 8	45 17 1	44 54 6	44 31 4	44 7 1	43 42 1	43 16 2	42 49 4	42 22 0	41 53 8	48
8	45 40 4	45 22 1	45 2 8	44 42 7	44 21 3	43 59 3	43 36 5	43 12 7	42 48 2	42 22 7	41 56 6	41 29 7	41 2 1	52
4	44 43 1	44 25 0	44 6 2	43 46 3	43 25 4	43 3 8	42 41 5	42 18 1	41 54 0	41 29 1	41 3 4	40 37 1	40 10 0	2 56
21 0	43 45 7	43 27 9	43 9 4	42 49 9	42 29 3	42 8 2	41 46 2	41 23 3	40 59 7	40 35 2	40 10 1	39 44 2	39 17 7	3 0

LATITUDE 12°.													
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	65 0 0	64 0 0	63 0 0	62 0 0	61 0 0	60 0 0	59 0 0	58 0 0	57 0 0	56 0 0	55 0 0	54 0 0	0 0
23 56	64 58.9	63 58.8	62 59.0	61 58.9	60 59.1	59 59.0	58 59.1	57 59.1	56 59.1	55 59.2	54 59.1	53 59.3	4
52	64 55.3	63 55.4	62 55.6	61 55.8	60 56.0	59 56.1	58 56.2	57 56.4	56 56.5	55 56.6	54 56.6	53 56.8	8
48	64 49.5	63 49.7	62 50.3	61 50.6	60 51.0	59 51.2	58 51.6	57 51.9	56 52.1	55 52.4	54 52.5	53 52.9	12
44	64 41.3	63 41.9	62 42.7	61 43.3	60 44.0	59 44.5	58 45.1	57 45.5	56 46.0	55 46.5	54 46.8	53 47.4	16
40	64 30.8	63 31.9	62 33.0	61 34.0	60 35.0	59 35.9	58 36.7	57 37.4	56 38.1	55 38.9	54 39.5	53 40.3	20
36	64 18.1	63 19.6	62 21.3	61 22.7	60 24.1	59 25.3	58 26.5	57 27.6	56 28.7	55 29.8	54 30.6	53 31.6	24
32	64 3.2	63 5.3	62 7.5	61 9.4	60 11.3	59 12.9	58 14.5	57 16.0	56 17.5	55 18.9	54 20.0	53 21.4	28
28	63 46.3	62 48.9	61 51.8	60 54.1	59 56.6	58 58.7	57 60.8	56 62.8	55 64.6	54 66.4	53 68.0	52 69.7	32
24	63 27.3	62 30.8	61 34.0	60 37.1	59 40.0	58 42.8	57 45.4	56 47.8	55 50.1	54 52.4	53 54.4	52 56.5	36
20	63 6.2	62 10.4	61 14.5	60 18.1	59 21.8	58 25.1	57 28.3	56 31.3	55 34.1	54 36.8	53 39.3	52 41.9	40
16	62 43.3	61 48.3	60 53.1	59 57.6	58 61.8	57 65.8	56 69.5	55 73.1	54 76.5	53 79.8	52 82.7	51 85.8	44
12	62 18.6	61 24.3	60 30.0	59 35.3	58 40.3	57 44.7	56 49.2	55 53.4	54 57.5	53 61.3	52 64.8	51 68.3	48
8	61 52.2	60 58.9	60 5.3	59 11.3	58 17.0	57 22.3	56 27.3	55 32.3	54 36.8	53 41.3	52 45.4	51 49.5	52
4	61 24.1	60 31.7	59 39.0	58 45.7	57 52.2	56 58.3	55 64.1	54 69.5	53 74.4	52 78.9	51 83.1	50 86.9	0 56
23 0	60 54.4	60 2.9	59 11.1	58 18.7	57 25.9	56 32.8	55 39.3	54 45.6	53 51.4	52 57.2	52 2.5	51 7.8	1 0
22 56	60 23.3	59 32.6	58 41.7	57 50.2	56 58.3	56 5.8	55 13.1	54 20.2	53 26.8	52 33.1	51 39.1	50 45.1	4
52	59 50.7	59 0.9	58 10.9	57 20.3	56 29.2	55 37.6	54 45.6	53 53.4	53 0.8	52 7.9	51 14.5	50 21.1	8
48	59 16.8	58 28.0	57 38.8	56 49.0	55 58.8	55 8.1	54 16.9	53 25.4	52 33.5	51 41.4	50 48.7	49 56.0	12
44	58 41.5	57 53.8	57 5.5	56 16.5	55 27.2	54 37.3	53 47.0	52 56.2	52 5.1	51 13.6	50 21.8	49 29.7	16
40	58 5.1	57 18.2	56 31.0	55 42.9	54 54.4	54 5.3	53 15.8	52 25.9	51 35.4	50 44.8	49 53.5	49 2.3	20
36	57 27.5	56 41.6	55 55.2	55 8.1	54 20.5	53 32.2	52 43.5	51 54.3	51 4.8	50 14.8	49 24.3	48 33.7	24
32	56 49.0	56 3.9	55 18.4	54 32.2	53 45.4	52 58.1	52 10.1	51 21.8	50 32.9	49 43.8	48 54.1	48 4.1	28
28	56 9.3	55 25.2	54 40.6	53 55.3	53 9.4	52 22.8	51 35.8	50 48.1	50 0.1	49 11.8	48 22.8	47 33.6	32
24	55 28.7	54 45.6	54 1.8	53 17.3	52 32.2	51 46.6	51 0.4	50 13.6	49 26.4	48 38.7	47 50.5	47 2.1	36
20	54 47.3	54 4.9	53 22.2	52 38.5	51 54.3	51 9.4	50 24.0	49 38.1	48 51.7	48 4.8	47 17.3	46 29.6	40
16	54 4.9	53 23.6	52 41.5	51 58.8	51 15.4	50 31.4	49 46.8	49 1.6	48 16.0	47 29.9	46 43.2	45 56.2	44
12	53 21.8	52 41.2	52 0.2	51 18.1	50 35.7	49 52.5	49 8.7	48 24.4	47 39.4	46 54.2	46 8.3	45 22.1	48
8	52 37.9	51 58.3	51 17.9	50 36.9	49 55.2	49 12.8	48 29.8	47 46.2	47 2.2	46 17.6	45 32.5	44 47.0	52
4	51 53.4	51 14.4	50 35.0	49 54.8	49 13.9	48 32.3	47 50.1	47 7.4	46 24.0	45 40.3	44 55.8	44 11.2	1 56
22 0	51 8.0	50 30.0	49 51.4	49 11.9	48 31.8	47 51.0	47 9.6	46 27.7	45 45.2	45 2.1	44 18.5	43 34.5	2 0
21 56	50 22.2	49 44.9	49 7.1	48 28.4	47 49.1	47 9.1	46 28.5	45 47.3	45 5.5	44 23.3	43 40.3	42 57.1	4
52	49 35.7	48 59.3	48 22.2	47 44.2	47 5.7	46 26.5	45 46.7	45 6.2	44 25.2	43 43.7	43 1.5	42 19.1	8
48	48 48.7	48 13.0	47 36.6	46 59.5	46 21.7	45 43.3	45 4.2	44 24.5	43 44.2	43 3.4	42 22.1	41 40.3	12
44	48 1.2	47 26.2	46 50.6	46 14.2	45 37.2	44 59.4	44 21.1	43 42.1	43 2.6	42 22.6	41 41.9	41 0.9	16
40	47 13.1	46 38.8	46 4.0	45 28.3	44 52.0	44 14.9	43 37.4	42 59.2	42 20.4	41 41.1	41 1.1	40 20.8	20
36	46 24.6	45 51.0	45 16.9	44 41.9	44 6.3	43 30.0	42 53.1	42 15.7	41 37.6	40 59.0	40 19.8	39 40.2	24
32	45 35.6	45 2.8	44 29.2	43 55.0	43 20.1	42 44.5	42 8.4	41 31.6	40 54.2	40 16.3	39 37.8	38 58.9	28
28	44 46.2	44 14.0	43 41.2	43 7.6	42 33.5	41 58.6	41 23.1	40 47.0	40 10.3	39 33.2	38 55.3	38 17.2	32
24	43 56.4	43 24.9	42 52.7	42 19.8	41 46.3	41 12.1	40 37.3	40 1.9	39 25.9	38 49.4	38 12.4	37 34.8	36
20	43 6.3	42 35.3	42 3.8	41 31.6	40 58.8	40 25.2	39 51.0	39 16.3	38 41.0	38 5.3	37 28.8	36 52.1	40
16	42 15.8	41 45.4	41 14.6	40 43.0	40 10.8	39 37.8	39 4.3	38 30.3	37 55.7	37 20.6	36 44.9	36 8.7	44
12	41 24.9	40 55.2	40 24.9	39 53.9	39 22.4	38 50.1	38 17.3	37 43.9	37 9.9	36 35.5	36 0.4	35 25.0	48
8	40 33.7	40 4.6	39 35.0	39 4.5	38 33.5	38 1.9	37 29.8	36 57.0	36 23.7	35 49.9	35 15.5	34 40.7	52
4	39 42.2	39 13.7	38 44.6	38 14.8	37 44.4	37 13.4	36 41.8	36 9.8	35 37.1	35 3.9	34 30.1	33 56.0	2 56
21 0	38 50.5	38 22.5	37 53.9	37 24.8	36 55.0	36 24.6	35 53.6	35 22.1	34 50.1	34 17.5	33 44.4	33 10.9	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 12°.																		
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.		
		Declination-																
Declination		Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.
h. m.	h. m.																	
15 0	21 0	43 45.7	43 27.9	43 9.4	42 49.9	42 29.3	42 8.2	41 46.2	41 23.3	40 59.7	40 35.2	40 10.1	39 44.2	39 17.7	3 0	9 0		
4	20 56	42 48.1	42 30.7	42 12.5	41 53.2	41 33.2	41 12.3	40 50.8	40 28.3	40 5.2	39 41.1	39 16.5	38 51.2	38 25.1	4	8 56		
8	52	41 50.6	41 33.4	41 15.5	40 56.6	40 36.8	40 16.3	39 55.2	39 33.2	39 10.4	38 46.9	38 22.6	37 57.8	37 32.3	8	52		
12	48	40 52.9	40 36.0	40 18.4	39 59.8	39 40.3	39 20.2	38 59.5	38 37.8	38 15.6	37 52.4	37 28.7	37 4.2	36 39.2	12	48		
16	44	39 55.2	39 38.5	39 21.2	39 2.9	38 43.7	38 24.0	38 3.6	37 42.4	37 20.4	36 57.7	36 34.4	36 10.5	35 45.9	16	44		
20	40	38 57.4	38 41.0	38 23.8	38 5.9	37 47.1	37 27.6	37 7.6	36 46.7	36 25.2	36 2.8	35 40.0	35 16.5	34 52.5	20	40		
24	36	37 59.6	37 43.4	37 26.5	37 8.8	36 50.3	36 31.1	36 11.5	35 50.9	35 29.7	35 7.9	34 45.4	34 22.4	33 58.7	24	36		
28	32	37 1.7	36 45.7	36 29.0	36 11.6	35 53.4	35 34.5	35 15.2	34 55.0	34 34.2	34 12.6	33 50.7	33 28.0	33 4.9	28	32		
32	28	36 3.7	35 47.9	35 31.6	35 14.4	34 56.4	34 37.8	34 18.8	33 58.9	33 38.5	33 17.4	32 55.7	32 33.6	32 10.8	32	28		
36	24	35 5.7	34 50.1	34 33.9	34 17.0	33 59.3	33 41.0	33 22.3	33 2.8	32 42.7	32 21.9	32 0.7	31 38.8	31 16.5	36	24		
40	20	34 7.7	33 52.3	33 36.3	33 19.5	33 2.1	32 44.1	32 25.7	32 6.5	31 46.8	31 26.4	31 5.5	30 44.1	30 22.0	40	20		
44	16	33 9.6	32 54.4	32 38.6	32 22.1	32 4.8	31 47.2	31 29.0	31 10.1	30 50.7	30 30.6	30 10.1	29 49.1	29 27.5	44	16		
48	12	32 11.4	31 56.4	31 40.8	31 24.5	31 7.5	30 50.1	30 32.2	30 13.6	29 54.5	29 34.8	29 14.6	28 54.0	28 32.8	48	12		
52	8	31 13.3	30 58.4	30 42.9	30 26.9	30 10.2	29 52.9	29 35.4	29 17.0	28 58.3	28 38.8	28 19.0	27 58.7	27 37.9	52	8		
15 56	4	30 15.1	30 0.3	29 45.1	29 29.2	29 12.7	28 55.8	28 38.4	28 20.4	28 1.9	27 42.8	27 23.3	27 3.3	26 42.9	3 56	4		
16 0	20 0	29 16.8	29 2.2	28 47.2	28 31.5	28 15.2	27 58.4	27 41.4	27 23.5	27 5.4	26 46.6	26 27.4	26 7.8	25 47.7	4 0	8 0		
4	19 56	28 18.5	28 4.0	27 49.1	27 33.7	27 17.6	27 1.1	26 44.2	26 26.7	26 8.8	25 50.3	25 31.5	25 12.2	24 52.4	4	7 56		
8	52	27 20.1	27 5.8	26 51.1	26 35.8	26 20.0	26 3.6	25 47.0	25 29.8	25 12.1	24 53.9	24 35.4	24 16.4	23 57.0	8	52		
12	48	26 21.9	26 7.7	25 53.0	25 37.9	25 22.2	25 6.2	24 49.8	24 32.7	24 15.4	23 57.5	23 39.2	23 20.6	23 1.5	12	48		
16	44	25 23.4	25 9.4	24 55.0	24 39.9	24 24.4	24 8.6	23 52.4	23 35.7	23 18.5	23 0.9	22 42.9	22 24.6	22 5.8	16	44		
20	40	24 25.1	24 11.2	23 56.8	23 42.0	23 26.6	23 10.9	22 55.0	22 38.5	22 21.6	22 4.3	21 46.6	21 28.5	21 10.1	20	40		
24	36	23 26.6	23 12.8	22 58.6	22 44.0	22 28.8	22 13.3	21 57.5	21 41.2	21 24.6	21 7.5	20 50.1	20 32.4	20 14.3	24	36		
28	32	22 28.1	22 14.5	22 0.4	21 45.9	21 30.9	21 15.6	21 0.0	20 43.9	20 27.6	20 10.7	19 53.6	19 36.1	19 18.3	28	32		
32	28	21 29.7	21 16.1	21 2.2	20 47.8	20 32.9	20 17.8	20 2.5	19 46.5	19 30.4	19 13.8	18 57.0	18 39.8	18 22.3	32	28		
36	24	20 31.2	20 17.7	20 3.9	19 49.6	19 34.9	19 20.0	19 4.8	18 49.1	18 33.2	18 16.8	18 0.3	17 43.4	17 26.2	36	24		
40	20	19 32.7	19 19.3	19 5.6	18 51.4	18 36.9	18 22.1	18 7.1	17 51.6	17 36.0	17 19.8	17 3.5	16 46.9	16 30.0	40	20		
44	16	18 34.2	18 20.8	18 7.2	17 53.3	17 38.8	17 24.2	17 9.4	16 54.1	16 38.6	16 22.8	16 6.6	15 50.3	15 33.6	44	16		
48	12	17 35.6	17 22.4	17 8.9	16 55.0	16 40.7	16 26.2	16 11.6	15 56.5	15 41.3	15 25.6	15 9.8	14 53.6	14 37.2	48	12		
52	8	16 37.1	16 23.9	16 10.5	15 56.7	15 42.6	15 28.3	15 13.8	14 58.9	14 43.8	14 28.4	14 12.7	13 56.9	13 40.8	52	8		
16 56	4	15 38.5	15 25.4	15 12.0	14 58.4	14 44.4	14 30.2	14 15.9	14 1.2	13 46.4	13 31.1	13 15.7	13 0.1	12 44.3	4 56	4		
17 0	19 0	14 39.9	14 26.8	14 13.6	14 0.1	13 46.2	13 32.2	13 18.0	13 3.5	12 48.7	12 33.8	12 18.6	12 3.3	11 47.6	5 0	7 0		
4	18 56	13 41.3	13 28.3	13 15.2	13 1.7	12 48.0	12 34.1	12 20.1	12 5.7	11 51.2	11 36.3	11 21.5	11 6.3	10 51.0	4	6 56		
8	52	12 42.7	12 29.7	12 16.7	12 3.4	11 49.7	11 35.9	11 22.1	11 7.9	10 53.5	10 38.9	10 24.1	10 9.3	9 54.2	8	52		
12	48	11 44.0	11 31.2	11 18.2	11 4.9	10 51.4	10 37.7	10 24.0	10 10.0	9 55.9	9 41.4	9 26.9	9 12.2	8 57.4	12	48		
16	44	10 45.4	10 32.6	10 19.7	10 6.5	9 53.1	9 39.6	9 26.0	9 12.1	8 58.1	8 43.9	8 29.6	8 15.1	8 0.5	16	44		
20	40	9 46.8	9 34.0	9 21.2	9 8.0	8 54.7	8 41.3	8 27.9	8 14.1	8 0.3	7 46.3	7 32.2	7 18.0	7 3.6	20	40		
24	36	8 48.1	8 35.4	8 22.6	8 9.6	7 56.3	7 43.1	7 29.7	7 16.2	7 2.5	6 48.6	6 34.7	6 20.7	6 6.6	24	36		
28	32	7 49.5	7 36.8	7 24.1	7 11.1	6 58.0	6 44.7	6 31.6	6 18.2	6 4.7	5 50.9	5 37.2	5 23.5	5 9.5	28	32		
32	28	6 50.8	6 38.2	6 25.5	6 12.6	5 59.5	5 46.5	5 33.4	5 20.1	5 6.7	4 53.3	4 39.7	4 26.1	4 12.5	32	28		
36	24	5 52.1	5 39.5	5 26.9	5 14.1	5 1.1	4 48.2	4 35.2	4 22.0	4 8.8	3 55.5	3 42.1	3 28.8	3 15.3	36	24		
40	20	4 53.4	4 40.9	4 28.2	4 15.6	4 2.7	3 49.8	3 36.9	3 23.9	3 10.8	2 57.6	2 44.5	2 31.3	2 18.1	40	20		
44	16	3 54.8	3 42.2	3 29.7	3 17.0	3 4.2	2 51.4	2 38.7	2 25.8	2 12.8	1 59.8	1 46.8	1 33.9	1 20.8	44	16		
48	12	2 56.1	2 43.6	2 31.0	2 18.4	2 5.7	1 53.0	1 40.4	1 27.6	1 14.8	1 2.0	0 49.1	0 36.3	0 23.5	48	12		
52	8	1 57.4	1 44.9	1 32.4	1 19.8	1 7.1	0 54.6	0 42.0	0 29.4	0 16.8	0 4.1	0 8.6	0 21.2	0 33.9	52	8		
17 56	4	0 58.7	0 46.2	0 33.7	0 21.3	0 8.6	0 3.9	0 16.3	0 28.8	0 41.3	0 53.9	1 6.4	1 18.8	1 31.2	5 56	4		
18 0	18 0	0 0.0	0 12.5	0 24.9	0 37.4	0 49.9	1 2.3	1 14.7	1 27.1	1 39.5	1 51.8	2 4.1	2 16.4	2 28.6	6 0	6 0		

LATITUDE 12°.																																
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>																				Westerly Hour Angle.										
Declination																						Declination										
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.																	
h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	h. m.																	
15	0	21	0	38	50.5	38	22.5	37	53.9	37	24.8	36	55.0	36	24.6	35	53.6	35	22.1	34	50.1	34	17.5	33	44.4	33	10.9	3	0	9	0	
	4	20	56	37	58.4	37	30.9	37	3.0	36	34.4	36	5.2	35	35.4	35	5.0	34	34.1	34	2.6	33	30.8	32	58.3	32	58.3	32	25.4	4	8	56
	8		52	37	6.1	36	39.2	36	11.8	35	43.7	35	15.1	34	45.8	34	16.1	33	45.7	33	14.9	32	43.6	32	11.8	31	39.6	8		52		
	12		48	36	13.5	35	47.2	35	20.3	34	52.8	34	24.7	33	56.0	33	26.8	32	57.1	32	26.9	31	56.1	31	24.9	30	53.3	12		48		
	16		44	35	20.7	34	54.9	34	28.5	34	1.5	33	34.0	33	5.8	32	37.2	32	8.1	31	38.4	31	8.3	30	37.6	30	6.7	16		44		
	20		40	34	27.7	34	2.3	33	36.5	33	10.0	32	43.0	32	15.4	31	47.4	31	18.8	30	49.7	30	20.2	29	50.1	29	19.7	20		40		
	24		36	33	34.5	33	9.6	32	44.2	32	18.2	31	51.8	31	24.8	30	57.2	30	29.2	30	0.7	29	31.7	29	2.3	28	32.5	24		36		
	28		32	32	41.0	32	16.7	31	51.7	31	26.2	31	0.3	30	33.8	30	6.8	29	39.3	29	11.4	28	43.0	28	14.1	27	44.9	28		32		
	32		28	31	47.5	31	23.4	30	59.0	30	34.0	30	8.6	29	42.6	29	16.1	28	49.2	28	21.8	27	54.0	27	25.6	26	57.0	32		28		
	36		24	30	53.5	30	30.1	30	6.1	29	41.6	29	16.7	28	51.1	28	25.2	27	58.8	27	31.9	27	4.6	26	36.8	26	8.8	36		24		
	40		20	29	59.6	29	36.5	29	13.0	28	49.0	28	24.5	27	59.5	27	34.0	27	8.1	26	41.8	26	15.1	25	47.8	25	20.4	40		20		
	44		16	29	5.4	28	42.8	28	19.7	27	56.1	27	32.1	27	7.6	26	42.6	26	17.2	25	51.4	25	25.2	24	58.6	24	31.7	44		16		
	48		12	28	11.1	27	48.8	27	26.3	27	3.0	26	39.6	26	15.5	25	51.0	25	26.1	25	0.8	24	35.2	24	9.0	23	42.7	48		12		
	52		8	27	16.6	26	54.8	26	32.6	26	9.9	25	46.7	25	23.2	24	59.2	24	34.8	24	10.0	23	44.9	23	19.3	22	53.4	52		8		
15	56		4	26	21.9	26	0.5	25	38.8	25	16.5	24	53.8	24	30.6	24	7.2	23	43.3	23	19.0	22	54.4	22	29.3	22	3.9	3	56	4	4	
16	0	20	0	25	27.2	25	6.2	24	44.8	24	22.9	24	0.7	23	38.0	23	14.9	22	51.6	22	27.8	22	3.6	21	39.0	21	14.2	4	0	8	0	
	4	19	56	24	32.3	24	11.6	23	50.6	23	29.2	23	7.4	22	45.1	22	22.6	21	59.6	21	8.6	20	42.1	20	12.7	19	20.4	4	56	7	56	
	8		52	23	37.2	23	16.9	22	56.3	22	35.3	22	14.0	21	52.1	21	30.0	21	7.6	20	44.6	20	21.6	19	57.9	19	34.2	8		52		
	12		48	22	42.0	22	22.1	22	1.9	21	41.3	21	20.4	20	59.0	20	37.3	20	15.2	19	52.9	19	30.1	19	7.1	18	43.8	12		48		
	16		44	21	46.7	21	27.2	21	7.4	20	47.1	20	26.6	20	5.6	19	44.4	19	22.8	19	0.8	18	38.7	18	16.0	17	53.3	16		44		
	20		40	20	51.3	20	32.2	20	12.7	19	52.8	19	32.7	19	12.1	18	51.3	18	30.1	18	8.7	17	46.9	17	24.9	17	2.5	20		40		
	24		36	19	55.8	19	37.0	19	17.9	18	58.4	18	38.6	18	18.5	17	58.1	17	37.4	17	16.3	16	55.1	16	33.4	16	11.7	24		36		
	28		32	19	0.2	18	41.7	18	23.0	18	3.9	17	44.4	17	24.7	17	4.7	16	44.4	16	23.9	16	3.0	15	41.9	15	20.5	28		32		
	32		28	18	4.5	17	46.3	17	27.9	17	9.1	16	50.1	16	30.8	16	11.2	15	51.3	15	31.2	15	10.8	14	50.1	14	29.3	32		28		
	36		24	17	8.7	16	50.8	16	32.7	16	14.3	15	55.7	15	36.7	15	17.6	14	58.1	14	38.4	14	18.5	13	58.2	13	37.9	36		24		
	40		20	16	12.7	15	55.2	15	37.5	15	19.5	15	1.1	14	42.6	14	23.8	14	4.7	13	45.4	13	26.0	13	6.2	12	46.3	40		20		
	44		16	15	16.7	14	59.5	14	42.2	14	24.4	14	6.5	13	48.3	13	29.9	13	11.3	12	52.4	12	33.4	12	14.0	11	54.6	44		16		
	48		12	14	20.6	14	3.8	13	46.6	13	29.3	13	11.7	12	53.9	12	35.8	12	17.6	11	59.2	11	40.5	11	21.7	11	2.7	48		12		
	52		8	13	24.5	13	7.8	12	51.1	12	34.1	12	16.9	11	59.4	11	41.7	11	23.9	11	5.8	10	47.7	10	29.2	10	10.7	52		8		
	16	56		4	12	28.2	12	11.9	11	55.5	11	38.7	11	21.9	11	4.8	10	47.5	10	30.0	10	12.4	9	54.6	9	36.6	9	18.5	4	56	4	4
17	0	19	0	11	31.9	11	15.8	10	59.7	10	43.3	10	26.8	10	10.1	9	53.1	9	36.1	9	18.8	9	1.4	8	43.8	8	26.2	5	0	7	0	
	4	18	56	10	35.5	10	19.8	10	3.8	9	47.8	9	31.6	9	15.2	8	58.7	8	42.0	8	25.1	8	8.1	7	51.0	7	33.8	4	56	6	56	
	8		52	9	39.0	9	23.5	9	8.0	8	52.2	8	36.3	8	20.3	8	4.1	7	47.8	7	31.3	7	14.8	6	58.0	6	41.2	8		52		
	12		48	8	42.4	8	27.3	8	12.0	7	56.6	7	41.0	7	25.2	7	9.5	6	53.5	6	37.4	6	21.3	6	4.9	5	48.6	12		48		
	16		44	7	45.8	7	30.9	7	15.9	7	0.8	6	45.6	6	30.2	6	14.7	5	59.1	5	43.4	5	27.7	5	11.7	4	55.8	16		44		
	20		40	6	49.1	6	34.5	6	19.8	6	5.0	5	50.1	5	35.0	5	19.8	5	4.6	4	49.3	4	34.0	4	18.5	4	3.0	20		40		
	24		36	5	52.4	5	38.0	5	23.6	5	9.1	4	54.5	4	39.7	4	24.9	4	10.0	3	55.1	3	40.2	3	25.0	3	10.0	24		36		
	28		32	4	55.6	4	41.5	4	27.3	4	13.1	3	58.8	3	44.4	3	29.9	3	15.4	3	0.8	2	46.2	2	31.5	2	16.9	28		32		
	32		28	3	58.7	3	44.8	3	31.0	3	17.0	3	3.0	2	48.9	2	34.9	2	20.7	2	6.5	1	52.2	1	37.9	1	23.7	32		28		
	36		24	3	1.8	2	48.1	2	34.6	2	20.9	2	7.2	1	53.5	1	39.7	1	25.9	1	12.0	0	58.2	0	44.2	0	30.4	36		24		
	40		20	2	4.8	1	51.4	1	38.1	1	24.7	1	11.3	0	57.9	0	44.5	0	30.9	0	17.5	0	4.0	0	9.5	0	23.0	40		20		
	44		16	1	7.8	0	54.6	0	41.6	0	28.5	0	15.4	0	2.2	0	10.9	0	24.0	0	37.2	0	50.2	1	3.4	1	16.4	44		16		
	48		12	0	10.7	0	2.2	0	15.0	0	27.8	0	40.6	0	53.5	1	6.3	1	19.1	1	31.8	1	44.6	1	57.3	2	10.0	48		12		
	52		8	0	46.4	0	59.1	1	11.6	1	24.2	1	36.7	1	49.3	2	1.8	2	14.2	2	26.7	2	39.0	2	51.3	3	3.6	52		8		
	17	56		4	1	43.6	1	56.0	2	8.3	2	20.7	2	32.9	2	45.1	2	57.3	3	9.4	3	21.5	3	33.5	3	45.4	3	57.3	5	56	4	4
18	0	18	0	2	40.8	2	53.0	3	5.1	3	17.1	3	29.1	3	41.0	3	52.9	4	4.7	4	16.4	4	28.0	4	39.6							

TRUE ALTITUDE OF BODY.

LATITUDE 13°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	77 0.0	78 0.0	79 0.0	80 0.0	81 0.0	82 0.0	83 0.0	84 0.0	85 0.0	86 0.0	87 0.0	88 0.0	89 0.0	90 0.0	0 0
23 56	76 57.7	77 57.6	78 57.4	79 57.1	80 56.8	81 56.3	82 55.9	83 55.2	84 54.2	85 52.9	86 50.6	87 46.4	88 36.2	89 20.0	0 4
52	76 51.0	77 50.3	78 49.3	79 48.3	80 47.1	81 45.6	82 43.6	83 41.1	84 37.6	85 32.6	86 25.0	87 12.2	88 4.8	89 0.0	8 8
48	76 39.8	77 38.2	78 36.3	79 34.1	80 31.4	81 28.1	82 24.0	83 18.7	84 11.7	85 2.0	86 48.0	87 26.9	88 54.3	89 58.1	12 16
44	76 24.5	77 21.8	78 18.6	79 14.8	80 10.1	81 4.7	82 57.9	83 49.4	84 38.3	85 23.7	86 5.8	87 36.4	88 55.8	89 58.1	16 16
40	76 5.2	77 1.2	77 56.2	78 50.7	79 44.0	80 35.9	81 26.2	82 14.3	83 59.2	84 40.1	85 15.3	86 43.0	87 1.0	88 3.4	20 20
36	75 42.2	76 36.5	77 29.9	78 22.4	79 13.5	80 2.8	81 50.0	82 34.7	83 16.0	84 52.8	85 24.0	86 48.0	87 3.4	88 5.6	24 24
32	75 15.8	76 8.4	77 0.0	77 50.3	78 39.1	79 25.8	80 10.3	81 51.7	82 29.6	83 5.8	84 30.8	85 52.0	86 5.8	87 7.6	28 28
28	74 46.3	75 37.2	76 26.9	77 15.0	78 1.4	78 45.6	79 27.3	80 5.8	81 40.7	82 11.2	83 36.4	84 55.4	85 82.2	86 7.6	32 32
24	74 14.0	75 3.0	75 50.7	76 36.8	77 20.9	78 2.9	78 42.1	79 18.1	80 50.3	81 18.2	82 41.1	83 58.4	84 81.9	85 9.4	36 36
20	73 39.1	74 26.5	75 12.2	75 56.1	76 38.1	77 17.9	77 54.6	78 28.5	79 58.4	80 24.1	81 45.2	82 1.0	83 11.2	84 11.2	40 40
16	73 2.0	73 47.4	74 31.4	75 13.4	75 53.4	76 31.0	77 5.7	77 37.4	78 5.3	79 29.2	80 48.8	81 7.9	82 12.8	83 12.8	44 44
12	72 22.7	73 6.5	73 48.7	74 29.0	75 7.0	75 42.6	76 15.4	77 45.2	78 11.4	79 33.7	80 77.2	81 52.0	82 7.8	83 14.6	48 48
8	71 41.7	72 23.9	73 4.4	73 42.8	74 19.1	74 53.0	75 23.9	76 52.1	77 16.8	78 37.7	79 54.9	80 77.7	81 7.7	82 16.2	52 52
4	70 59.0	71 39.6	72 18.4	72 55.4	73 30.0	74 2.2	74 31.8	75 58.3	76 21.6	77 41.5	78 57.5	79 76.9	80 9.8	81 17.9	0 56
23 0	70 15.0	70 54.0	71 31.4	72 6.6	72 39.8	73 10.7	73 38.6	74 3.8	74 26.0	75 44.8	76 0.1	77 11.6	78 19.4	79 19.4	1 0
22 56	69 29.5	70 7.3	70 43.1	71 16.9	71 48.7	72 18.2	72 44.9	73 8.9	73 29.9	74 47.9	75 2.4	76 13.3	77 21.0	78 21.0	4 4
52	68 43.0	69 19.3	69 53.9	70 26.4	70 56.9	71 25.0	71 50.7	72 13.7	72 33.5	73 50.7	74 6.7	75 15.2	76 22.6	77 22.6	8 8
48	67 55.4	68 30.5	69 3.7	69 35.1	70 4.2	70 31.2	71 55.8	72 17.9	73 36.9	74 53.7	75 6.7	76 17.0	77 24.2	78 24.2	12 12
44	67 6.9	67 40.8	68 12.9	68 42.9	69 11.1	69 37.1	70 0.6	70 21.8	71 40.0	72 55.9	73 8.8	74 18.7	75 25.7	76 25.7	16 16
40	66 17.5	66 50.3	67 21.2	67 50.3	68 17.4	68 42.5	69 5.0	69 25.4	70 43.0	71 58.4	72 10.8	73 20.3	74 27.3	75 27.3	20 20
36	65 27.5	65 59.2	66 29.0	66 57.1	67 23.3	67 47.4	68 9.2	68 28.8	69 45.9	70 6.6	71 12.6	72 22.0	73 28.7	74 28.7	24 24
32	64 36.7	65 7.4	65 36.4	66 3.4	66 28.7	67 52.0	68 13.0	68 32.0	69 48.4	70 6.8	71 14.6	72 23.6	73 30.4	74 30.4	28 28
28	63 45.3	64 15.1	64 43.1	65 9.4	65 33.7	66 56.3	67 16.8	68 35.1	69 51.0	70 6.7	71 16.1	72 25.2	73 31.9	74 31.9	32 32
24	62 53.4	63 22.2	63 49.4	64 14.9	64 38.6	65 0.4	65 20.2	66 38.0	67 53.4	68 6.8	69 18.0	70 26.8	71 33.4	72 33.4	36 36
20	62 1.0	62 29.0	62 55.3	63 20.1	63 43.1	64 4.3	64 23.3	65 40.7	66 55.6	67 8.8	68 19.7	69 28.3	70 35.0	71 35.0	40 40
16	61 8.1	61 35.3	62 1.0	62 24.9	62 47.3	63 7.8	63 26.5	64 43.2	65 57.9	66 10.7	67 21.4	68 30.0	69 36.4	70 36.4	44 44
12	60 14.8	60 41.3	61 6.3	61 29.6	61 51.2	62 11.3	62 29.3	63 45.8	64 0.0	65 12.6	66 23.1	67 31.5	68 38.0	69 38.0	48 48
8	59 21.2	59 46.9	60 11.2	60 33.9	60 55.0	61 14.4	61 32.2	62 48.2	63 2.1	64 14.4	65 24.7	66 33.1	67 39.5	68 39.5	52 52
4	58 27.1	58 52.3	59 15.8	59 38.0	59 58.5	60 17.6	60 34.8	61 50.5	62 4.2	63 16.2	64 26.4	65 34.7	66 41.1	67 41.1	1 56
22 0	57 32.8	57 57.4	58 20.3	58 41.8	59 2.0	59 20.5	59 37.4	59 52.7	60 6.1	60 18.0	60 27.9	60 36.2	60 42.6	61 42.6	2 0
21 56	56 38.2	57 2.1	57 24.6	57 45.7	58 5.2	58 23.4	58 39.9	58 54.9	59 8.0	59 19.6	59 29.6	59 37.7	59 44.2	60 44.2	4 4
52	55 43.3	56 6.6	56 28.7	56 49.2	57 8.3	57 26.1	57 42.2	57 57.0	58 9.8	58 21.3	58 31.1	58 39.3	58 45.8	59 45.8	8 8
48	54 48.2	55 11.0	55 32.5	55 52.6	56 11.4	56 28.7	56 44.5	56 58.9	57 11.7	57 23.0	57 32.7	57 40.8	57 47.3	58 47.3	12 12
44	53 52.9	54 15.1	54 36.1	54 55.9	55 14.2	55 31.3	55 46.7	56 0.9	56 13.4	56 24.7	56 34.3	56 42.8	56 48.9	57 48.9	16 16
40	52 57.3	53 19.1	53 39.6	53 59.0	54 17.0	54 33.6	54 49.0	55 2.8	55 15.2	55 26.3	55 35.8	55 43.9	55 50.4	56 50.4	20 20
36	52 1.5	52 22.9	52 43.1	53 1.9	53 19.6	53 36.0	53 51.0	54 4.8	54 16.9	54 27.8	54 37.4	54 45.4	54 52.1	55 52.1	24 24
32	51 5.6	51 26.5	51 46.3	52 4.8	52 22.1	52 38.2	52 53.1	53 6.6	53 18.7	53 29.5	53 38.9	53 47.0	53 53.7	54 53.7	28 28
28	50 9.5	50 30.1	50 49.3	51 7.6	51 24.6	51 40.5	51 55.0	52 8.4	52 20.3	52 31.1	52 40.4	52 48.5	52 55.3	53 55.3	32 32
24	49 13.2	49 33.4	49 52.4	50 10.2	50 27.1	50 42.7	50 56.9	51 10.2	51 22.0	51 32.7	51 42.1	51 50.1	51 56.8	52 56.8	36 36
20	48 16.8	48 36.7	48 55.2	49 12.9	49 29.3	49 44.7	49 58.9	50 11.9	50 23.6	50 34.2	50 43.6	50 51.6	50 58.5	51 58.5	40 40
16	47 20.3	47 39.7	47 58.1	48 15.4	48 31.6	48 46.8	48 60.7	49 13.7	49 25.2	49 35.8	49 45.0	49 53.2	50 0.1	50 0.1	44 44
12	46 23.6	46 42.8	47 0.7	47 17.8	47 33.8	47 48.8	48 2.5	48 15.3	48 26.9	48 37.2	48 46.6	48 54.7	49 1.8	49 1.8	48 48
8	45 26.9	45 45.6	46 3.4	46 20.2	46 36.0	46 50.7	47 4.4	47 17.0	47 28.4	47 38.9	47 48.1	47 56.3	48 3.4	48 3.4	52 52
4	44 30.0	44 48.5	45 5.9	45 22.5	45 38.0	45 52.6	46 6.1	46 18.7	46 30.0	46 40.4	46 49.7	46 57.9	47 5.1	47 5.1	2 56
21 0	43 33.0	43 51.2	44 8.4	44 24.7	44 40.1	44 54.5	45 7.9	45 20.3	45 31.6	45 41.9	45 51.3	45 59.5	46 6.7	46 6.7	3 0

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LATITUDE 13°.																		
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.				
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°		
h.	m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	h.	m.
21	0	43 33.0	43 51.2	44 8.4	44 24.7	44 40.1	44 54.5	45 7.9	45 20.3	45 31.6	45 41.9	45 51.3	45 59.5	46 6.7			3	0
20	56	42 35.9	42 53.8	43 10.8	43 26.9	43 42.0	43 56.3	44 9.5	44 21.9	44 33.1	44 43.5	44 52.8	45 1.1	45 8.4				4
	52	41 38.7	41 56.5	42 13.1	42 29.0	42 44.0	42 58.1	43 11.3	43 23.5	43 34.7	43 45.0	43 54.4	44 2.7	44 10.1				8
	48	40 41.5	40 58.9	41 15.4	41 31.1	41 45.9	41 59.9	42 12.9	42 25.2	42 36.2	42 46.6	42 55.9	43 4.3	43 11.8				12
	44	39 44.1	40 1.3	40 17.6	40 33.1	40 47.8	41 1.6	41 14.6	41 26.7	41 37.9	41 48.1	41 57.5	42 5.9	42 13.5				16
	40	38 46.7	39 3.6	39 19.8	39 35.1	39 49.7	40 3.4	40 16.2	40 28.3	40 39.3	40 49.6	40 59.0	41 7.6	41 15.2				20
	36	37 49.2	38 6.0	38 21.9	38 37.1	38 51.5	39 5.1	39 17.9	39 29.8	39 40.8	39 51.1	40 0.6	40 9.1	40 17.0				24
	32	36 51.7	37 8.2	37 24.0	37 39.0	37 53.2	38 6.8	38 19.5	38 31.3	38 42.4	38 52.7	39 2.1	39 10.9	39 18.7				28
	28	35 54.1	36 10.4	36 26.0	36 40.9	36 55.0	37 8.4	37 21.0	37 32.9	37 43.9	37 54.2	38 3.8	38 12.5	38 20.5				32
	24	34 56.4	35 12.5	35 28.0	35 42.7	35 56.7	36 10.0	36 22.6	36 34.5	36 45.5	36 55.8	37 5.4	37 14.2	37 22.2				36
	20	33 58.7	34 14.6	34 29.9	34 44.5	34 58.4	35 11.7	35 24.2	35 36.0	35 47.0	35 57.4	36 7.0	36 15.9	36 24.1				40
	16	33 0.9	33 16.8	33 31.8	33 46.2	34 0.1	34 13.3	34 25.7	34 37.6	34 48.6	34 59.0	35 8.6	35 17.6	35 25.9				44
	12	32 3.1	32 18.7	32 33.7	32 48.0	33 1.8	33 14.9	33 27.3	33 39.1	33 50.1	34 0.5	34 10.3	34 19.3	34 27.7				48
	8	31 5.2	31 20.7	31 35.5	31 49.8	32 3.4	32 16.5	32 28.9	32 40.7	32 51.6	33 2.1	33 11.9	33 21.0	33 29.6				52
	4	30 7.3	30 22.6	30 37.4	30 51.5	31 5.1	31 18.1	31 30.4	31 42.2	31 53.2	32 3.7	32 13.6	32 22.8	32 31.4			3	56
20	0	29 9.4	29 24.5	29 39.1	29 53.3	30 6.7	30 19.7	30 31.9	30 43.7	30 54.8	31 5.3	31 15.3	31 24.5	31 33.3			4	0
19	56	28 11.4	28 26.4	28 40.9	28 54.9	29 8.4	29 21.2	29 33.5	29 45.3	29 56.3	30 7.0	30 16.9	30 26.3	30 35.2				4
	52	27 13.3	27 28.3	27 42.7	27 56.5	28 9.9	28 22.8	28 35.0	28 46.8	28 57.9	29 8.5	29 18.6	29 28.1	29 37.1				8
	48	26 15.3	26 30.0	26 44.4	26 58.1	27 11.5	27 24.3	27 36.6	27 48.4	27 59.5	28 10.2	28 20.3	28 29.9	28 39.0				12
	44	25 17.2	25 31.9	25 46.0	25 59.8	26 13.1	26 25.8	26 38.1	26 49.9	27 1.1	27 11.9	27 22.0	27 31.7	27 40.9				16
	40	24 19.0	24 33.6	24 47.8	25 1.4	25 14.6	25 27.4	25 39.6	25 51.5	26 2.7	26 13.5	26 23.8	26 33.6	26 42.9				20
	36	23 20.9	23 35.4	23 49.4	24 3.0	24 16.2	24 28.9	24 41.2	24 53.0	25 4.3	25 15.2	25 25.5	25 35.4	25 44.9				24
	32	22 22.7	22 37.1	22 51.1	23 4.6	23 17.8	23 30.5	23 42.7	23 54.6	24 5.8	24 16.9	24 27.3	24 37.3	24 46.9				28
	28	21 24.5	21 38.8	21 52.7	22 6.2	22 19.3	22 32.0	22 44.2	22 56.2	23 7.5	23 18.5	23 29.1	23 39.3	23 49.0				32
	24	20 26.2	20 40.5	20 54.3	21 7.7	21 20.9	21 33.5	21 45.8	21 57.7	22 9.1	22 20.2	22 30.9	22 41.2	22 51.0				36
	20	19 28.0	19 42.1	19 55.9	20 9.3	20 22.3	20 35.1	20 47.4	20 59.3	21 10.8	21 22.0	21 32.7	21 43.0	21 53.1				40
	16	18 29.7	18 43.8	18 57.5	19 10.8	19 23.9	19 36.6	19 49.0	20 1.0	20 12.5	20 23.7	20 34.6	20 45.0	20 55.2				44
	12	17 31.4	17 45.4	17 59.1	18 12.4	18 25.5	18 38.2	18 50.5	19 2.6	19 14.2	19 25.5	19 36.4	19 47.1	19 57.3				48
	8	16 33.1	16 47.0	17 0.6	17 14.0	17 27.0	17 39.7	17 52.1	18 4.2	18 15.9	18 27.3	18 38.4	18 49.0	18 59.5				52
	4	15 34.8	15 48.6	16 2.2	16 15.5	16 28.5	16 41.3	16 53.7	17 5.8	17 17.5	17 29.1	17 40.2	17 51.1	18 1.6			4	56
19	0	14 36.4	14 50.2	15 3.8	15 17.1	15 30.1	15 42.9	15 55.3	16 7.5	16 19.3	16 30.8	16 42.2	16 53.1	17 3.9			5	0
18	56	13 38.0	13 51.8	14 5.3	14 18.6	14 31.6	14 44.4	14 56.9	15 9.2	15 21.0	15 32.7	15 44.1	15 55.3	16 6.1				4
	52	12 39.7	12 53.4	13 6.9	13 20.1	13 33.2	13 46.0	13 58.5	14 10.8	14 22.8	14 34.5	14 46.1	14 57.3	15 8.4				8
	48	11 41.3	11 55.0	12 8.4	12 21.7	12 34.7	12 47.6	13 0.1	13 12.5	13 24.5	13 36.5	13 48.1	13 59.5	14 10.6				12
	44	10 42.9	10 56.5	11 10.0	11 23.2	11 36.3	11 49.1	12 1.8	12 14.2	12 26.3	12 38.3	12 50.1	13 1.6	13 13.0				16
	40	9 44.5	9 58.1	10 11.5	10 24.8	10 37.8	10 50.7	11 3.4	11 15.9	11 28.1	11 40.3	11 52.2	12 3.8	12 15.3				20
	36	8 46.1	8 59.6	9 13.1	9 26.3	9 39.4	9 52.3	10 5.1	10 17.6	10 30.0	10 42.2	10 54.2	11 6.1	11 17.7				24
	32	7 47.6	8 1.2	8 14.6	8 27.8	8 41.0	8 54.0	9 6.7	9 19.4	9 31.8	9 44.2	9 56.3	10 8.3	10 20.2				28
	28	6 49.2	7 2.7	7 16.1	7 29.4	7 42.6	7 55.6	8 8.4	8 21.2	8 33.7	8 46.2	8 58.5	9 10.6	9 22.6				32
	24	5 50.7	6 4.3	6 17.6	6 31.0	6 44.1	6 57.2	7 10.2	7 23.0	7 35.6	7 48.2	8 0.6	8 12.9	8 25.1				36
	20	4 52.3	5 5.8	5 19.2	5 32.5	5 45.7	5 58.9	6 11.9	6 24.8	6 37.5	6 50.3	7 2.8	7 15.2	7 27.6				40
	16	3 53.9	4 7.4	4 20.7	4 34.1	4 47.4	5 0.6	5 13.6	5 26.7	5 39.5	5 52.3	6 5.1	6 17.6	6 30.2				44
	12	2 55.4	3 8.9	3 22.3	3 35.7	3 49.0	4 2.3	4 15.4	4 28.6	4 41.5	4 54.5	5 7.3	5 20.1	5 32.8				48
	8	1 57.0	2 10.4	2 23.8	2 37.3	2 50.6	3 4.0	3 17.2	3 30.4	3 43.5	3 56.6	4 9.6	4 22.5	4 35.4				52
	4	0 58.5	1 12.0	1 25.4	1 38.8	1 52.3	2 5.7	2 19.0	2 32.3	2 45.5	2 58.8	3 11.9	3 25.0	3 38.1			5	56
18	0	0 0.0	0 13.5	0 27.0	0 40.5	0 53.9	1 7.4	1 20.8	1 34.3	1 47.6	2 1.0	2 14.3	2 27.6	2 40.8			6	0

LATITUDE 13°.														Westerly Hour Angle.	
DECLINATION — same Name as — LATITUDE.														Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	46 12.8	46 17.9	46 21.7	46 24.7	46 26.3	46 27.0	46 26.6	46 25.0	46 22.3	46 18.6	46 13.8	46 7.8	3	0
20	56	45 14.5	45 19.9	45 23.9	45 27.0	45 29.0	45 29.9	45 29.9	45 28.6	45 26.4	45 23.1	45 18.7	45 13.3		4
	52	44 16.4	44 21.8	44 26.0	44 29.4	44 31.6	44 32.9	44 33.1	44 32.2	44 30.4	44 27.5	44 23.7	44 18.6		8
	48	43 18.2	43 23.8	43 28.2	43 31.8	43 34.3	43 35.8	43 36.4	43 35.9	43 34.1	43 32.0	43 28.6	43 24.1		12
	44	42 20.0	42 25.8	42 30.4	42 34.2	42 36.9	42 38.8	42 39.7	42 39.5	42 38.4	42 36.4	42 33.5	42 29.4		16
	40	41 22.0	41 27.8	41 32.6	41 36.6	41 39.6	41 41.7	41 42.9	41 43.1	41 42.5	41 40.8	41 38.3	41 34.7		20
	36	40 23.8	40 29.9	40 34.8	40 39.1	40 42.3	40 44.7	40 46.2	40 46.7	40 46.5	40 45.3	40 43.1	40 40.0		24
	32	39 25.7	39 31.8	39 37.1	39 41.5	39 45.0	39 47.7	39 49.4	39 50.4	39 50.4	39 49.6	39 48.0	39 45.3		28
	28	38 27.5	38 33.9	38 39.3	38 44.0	38 47.7	38 50.6	38 52.8	38 53.9	38 54.4	38 54.0	38 52.8	38 50.6		32
	24	37 29.5	37 35.9	37 41.5	37 46.4	37 50.4	37 53.6	37 56.1	37 57.6	37 58.3	37 58.4	37 57.6	37 55.8		36
	20	36 31.4	36 38.1	36 43.8	36 48.9	36 53.1	36 56.7	36 59.3	37 1.2	37 2.4	37 2.7	37 2.4	37 1.0		40
	16	35 33.4	35 40.1	35 46.1	35 51.4	35 55.9	35 59.6	36 2.7	36 4.9	36 6.4	36 7.1	36 7.1	36 6.2		44
	12	34 35.3	34 42.3	34 48.4	34 54.0	34 58.6	35 2.7	35 6.0	35 8.5	35 10.4	35 11.5	35 11.9	35 11.4		48
	8	33 37.3	33 44.3	33 50.8	33 56.4	34 1.4	34 5.7	34 9.4	34 12.2	34 14.4	34 15.8	34 16.6	34 16.6		52
	4	32 39.3	32 46.6	32 53.0	32 59.1	33 4.2	33 8.8	33 12.7	33 15.9	33 18.4	33 20.3	33 21.4	33 21.8	3	56
20	0	31 41.3	31 48.7	31 55.4	32 1.6	32 7.1	32 11.9	32 16.1	32 19.5	32 22.4	32 24.6	32 26.2	32 26.9	4	0
19	56	30 43.3	30 51.0	30 57.8	31 4.2	31 9.9	31 15.0	31 19.5	31 23.3	31 26.4	31 29.1	31 31.0	31 32.2		4
	52	29 45.4	29 53.2	30 0.2	30 6.9	30 12.8	30 18.1	30 22.9	30 26.9	30 30.5	30 33.4	30 35.8	30 37.4		8
	48	28 47.5	28 55.4	29 2.7	29 9.5	29 15.7	29 21.3	29 26.3	29 30.8	29 34.5	29 37.9	29 40.6	29 42.6		12
	44	27 49.5	27 57.7	28 5.3	28 12.2	28 18.6	28 24.5	28 29.8	28 34.5	28 38.7	28 42.3	28 45.4	28 47.8		16
	40	26 51.7	27 0.0	27 7.6	27 14.9	27 21.5	27 27.7	27 33.3	27 38.3	27 42.8	27 46.8	27 50.2	27 53.0		20
	36	25 53.8	26 2.3	26 10.1	26 17.6	26 24.5	26 30.9	26 36.8	26 42.1	26 46.9	26 51.2	26 55.1	26 58.2		24
	32	24 56.0	25 4.6	25 12.6	25 20.4	25 27.4	25 34.1	25 40.3	25 45.9	25 51.1	25 55.8	26 0.0	26 3.6		28
	28	23 58.2	24 7.0	24 15.2	24 23.1	24 30.4	24 37.4	24 43.9	24 49.8	24 55.3	25 0.3	25 4.9	25 8.8		32
	24	23 0.4	23 9.4	23 17.8	23 25.9	23 33.5	23 40.7	23 47.4	23 53.7	23 59.5	24 4.9	24 9.8	24 14.1		36
	20	22 2.7	22 11.8	22 20.4	22 28.8	22 36.6	22 44.0	22 51.0	22 57.6	23 3.7	23 9.5	23 14.7	23 19.5		40
	16	21 4.9	21 14.3	21 23.1	21 31.7	21 39.7	21 47.4	21 54.7	22 1.5	22 8.0	22 14.0	22 19.7	22 24.8		44
	12	20 7.1	20 16.7	20 25.8	20 34.5	20 42.8	20 50.8	20 58.4	21 5.5	21 12.3	21 18.7	21 24.7	21 30.2		48
	8	19 9.5	19 19.2	19 28.5	19 37.5	19 46.0	19 54.3	20 2.1	20 9.5	20 16.7	20 23.4	20 29.8	20 35.6		52
	4	18 11.8	18 21.7	18 31.1	18 40.4	18 49.3	18 57.7	19 5.9	19 13.6	19 21.0	19 28.1	19 34.8	19 41.1	4	56
19	0	17 14.2	17 24.3	17 33.9	17 43.4	17 52.5	18 1.2	18 9.7	18 17.7	18 25.5	18 32.8	18 40.0	18 46.6	5	0
18	56	16 16.6	16 26.9	16 36.8	16 46.5	16 55.7	17 4.8	17 13.5	17 21.8	17 29.9	17 37.6	17 45.1	17 52.1		4
	52	15 19.1	15 29.5	15 39.6	15 49.5	15 59.0	16 8.3	16 17.4	16 26.0	16 34.4	16 42.5	16 50.3	16 57.7		8
	48	14 21.6	14 32.2	14 42.5	14 52.6	15 2.4	15 12.0	15 21.2	15 30.2	15 39.0	15 47.4	15 55.5	16 3.3		12
	44	13 24.0	13 34.9	13 45.4	13 55.8	14 5.8	14 15.6	14 25.2	14 34.4	14 43.5	14 52.3	15 0.8	15 9.0		16
	40	12 26.6	12 37.6	12 48.4	12 59.0	13 9.2	13 19.3	13 29.2	13 38.8	13 48.1	13 57.3	14 6.2	14 14.7		20
	36	11 29.1	11 40.4	11 51.3	12 2.2	12 12.7	12 23.1	12 33.2	12 43.1	12 52.8	13 2.3	13 11.5	13 20.5		24
	32	10 31.7	10 43.2	10 54.3	11 5.4	11 16.3	11 26.9	11 37.3	11 47.5	11 57.5	12 7.4	12 16.9	12 26.3		28
	28	9 34.4	9 46.0	9 57.4	10 8.7	10 19.8	10 30.8	10 41.5	10 52.0	11 2.3	11 12.5	11 22.5	11 32.1		32
	24	8 37.0	8 49.0	9 0.6	9 12.1	9 23.4	9 34.6	9 45.7	9 56.5	10 7.2	10 17.6	10 28.0	10 38.0		36
	20	7 39.8	7 51.9	8 3.7	8 15.5	8 27.1	8 38.6	8 49.9	9 1.1	9 12.1	9 22.9	9 33.6	9 44.0		40
	16	6 42.6	6 54.8	7 6.9	7 19.0	7 30.8	7 42.6	7 54.2	8 5.6	8 17.0	8 28.2	8 39.3	8 50.0		44
	12	5 45.3	5 57.9	6 10.2	6 22.5	6 34.6	6 46.6	6 58.6	7 10.3	7 22.0	7 33.6	7 45.0	7 56.2		48
	8	4 48.2	5 0.9	5 13.5	5 26.0	5 38.4	5 50.8	6 3.0	6 15.0	6 27.1	6 39.0	6 50.8	7 2.4		52
	4	3 51.1	4 4.0	4 16.8	4 29.7	4 42.3	4 54.9	5 7.5	5 19.9	5 32.2	5 44.5	5 56.7	6 8.6	5	56
18	0	2 54.0	3 7.2	3 20.2	3 33.3	3 46.2	3 59.1	4 12.0	4 24.7	4 37.4	4 50.0	5 2.6	5 15.0	6	0

LATITUDE 13°.															
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.		
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°		
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	77 0.0	76 0.0	75 0.0	74 0.0	73 0.0	72 0.0	71 0.0	70 0.0	69 0.0	68 0.0	67 0.0	66 0.0	65 0.0	0 0	0 0
23 56	76 57.7	75 57.9	74 58.1	73 58.1	72 58.2	71 58.5	70 58.3	69 58.5	68 58.5	67 58.7	66 58.6	65 58.8	64 58.9	4	4
52	76 51.0	75 51.7	74 52.1	73 52.5	72 53.0	71 53.5	70 53.8	69 54.2	68 54.3	67 54.6	66 54.8	65 55.1	64 55.3	8	8
48	76 39.8	75 41.4	74 42.4	73 43.4	72 44.3	71 45.4	70 46.1	69 46.9	68 47.3	67 47.9	66 48.3	65 48.9	64 49.5	12	12
44	76 24.5	75 27.0	74 29.0	73 30.9	72 32.4	71 34.1	70 35.3	69 36.7	68 37.5	67 38.6	66 39.4	65 40.4	64 41.3	16	16
40	76 5.2	75 8.8	74 12.0	73 14.9	72 17.3	71 19.7	70 21.7	69 23.6	68 25.2	67 26.7	66 28.1	65 29.5	64 30.8	20	20
36	75 42.2	74 47.2	73 51.8	72 55.6	71 59.1	70 62.4	69 65.1	68 67.9	67 70.6	66 73.2	65 75.8	64 78.3	63 80.8	24	24
32	75 15.8	74 22.4	73 28.2	72 33.4	71 38.0	70 42.3	69 46.0	68 49.5	67 52.6	66 55.6	65 58.3	64 60.8	63 63.2	28	28
28	74 46.3	73 54.6	73 1.8	72 8.2	71 14.0	70 19.5	69 24.2	68 28.8	67 32.6	66 36.5	65 39.9	64 43.2	63 46.3	32	32
24	74 14.0	73 24.0	72 32.6	71 40.4	70 47.5	69 54.2	69 0.1	68 5.6	67 10.5	66 15.1	65 19.3	64 23.5	63 27.3	36	36
20	73 39.1	72 50.7	72 0.9	71 10.1	70 18.6	69 26.5	68 33.5	67 40.2	66 46.0	65 51.6	64 56.8	64 1.7	63 6.2	40	40
16	73 2.0	72 15.2	71 26.9	70 37.6	69 47.5	68 56.6	68 4.8	67 12.6	66 19.5	65 26.2	64 32.2	63 37.9	62 43.3	44	44
12	72 22.7	71 37.6	70 50.9	70 3.1	69 14.3	68 24.7	67 34.1	66 43.0	65 51.1	64 58.7	64 5.7	63 12.3	62 18.6	48	48
8	71 41.7	70 58.0	70 13.0	69 26.5	68 39.2	67 50.9	67 1.5	66 11.5	65 20.7	64 29.4	63 37.4	62 45.1	61 52.2	52	52
4	70 59.0	70 16.8	69 33.2	68 48.3	68 2.3	67 15.3	66 27.2	65 38.4	64 48.7	63 58.5	63 7.5	62 16.1	61 24.1	0 56	0 56
23 0	70 15.0	69 34.2	68 52.1	68 8.4	67 23.7	66 38.1	65 51.2	65 3.5	64 14.9	63 25.8	62 35.8	61 45.7	60 54.4	1 0	1 0
22 56	69 29.5	68 50.3	68 9.4	67 27.1	66 43.8	65 59.4	65 13.7	64 27.2	63 39.8	62 51.6	62 2.7	61 13.2	60 23.3	4	4
52	68 43.0	68 5.0	67 25.5	66 44.6	66 2.4	65 19.2	64 34.7	63 49.5	63 3.1	62 16.1	61 28.1	60 39.8	59 50.7	8	8
48	67 55.4	67 18.7	66 40.5	66 0.8	65 19.7	64 37.7	63 54.5	63 10.4	62 25.1	61 39.1	60 52.3	60 4.9	59 16.8	12	12
44	67 6.9	66 31.5	65 54.4	65 15.8	64 36.0	63 55.2	63 13.0	62 30.0	61 45.8	61 0.9	60 15.1	59 28.7	58 41.5	16	16
40	66 17.5	65 43.2	65 7.3	64 29.9	63 51.3	63 11.6	62 30.4	61 48.5	61 5.4	60 21.6	59 36.8	58 51.3	58 5.1	20	20
36	65 27.5	64 54.3	64 19.3	63 43.1	63 5.6	62 26.9	61 46.9	61 6.0	60 24.0	59 41.1	58 57.3	58 12.8	57 27.5	24	24
32	64 36.7	64 4.4	63 30.7	62 55.4	62 18.9	61 41.3	61 2.3	60 22.6	59 41.4	58 59.5	58 16.8	57 33.2	56 49.0	28	28
28	63 45.3	63 14.0	62 41.3	62 7.1	61 31.5	60 54.9	60 17.0	59 38.1	58 58.0	58 17.1	57 35.2	56 52.7	56 9.3	32	32
24	62 53.4	62 23.0	61 51.2	61 17.9	60 43.4	60 7.7	59 30.8	58 52.8	58 13.7	57 33.7	56 52.8	56 11.2	55 28.7	36	36
20	62 1.0	61 31.5	61 0.4	60 28.1	59 54.6	59 19.9	58 48.7	58 6.8	57 28.5	56 49.5	56 9.6	55 28.7	54 47.3	40	40
16	61 8.1	60 39.4	60 9.3	59 37.8	59 5.1	58 31.2	57 56.1	57 19.9	56 42.7	56 4.6	55 25.4	54 45.6	54 4.9	44	44
12	60 14.8	59 46.9	59 17.6	58 47.0	58 15.0	57 42.1	57 7.7	56 32.6	55 56.1	55 18.8	54 40.6	54 1.6	53 21.8	48	48
8	59 21.2	58 54.0	58 25.5	57 55.5	57 24.5	56 52.2	56 18.8	55 44.5	55 8.9	54 32.5	53 55.1	53 16.9	52 37.9	52	52
4	58 27.1	58 0.7	57 32.8	57 3.7	56 33.3	56 2.0	55 29.3	54 55.7	54 21.0	53 45.4	53 8.8	52 31.4	51 53.4	1 56	1 56
22 0	57 32.8	57 7.1	56 39.9	56 11.4	55 41.9	55 11.2	54 39.3	54 6.5	53 32.6	52 57.8	52 22.0	51 45.5	51 8.0	2 0	2 0
21 56	56 38.2	56 13.1	55 46.5	55 18.8	54 49.9	54 20.0	53 48.9	53 16.8	52 43.6	52 9.5	51 34.6	50 58.8	50 22.2	4	4
52	55 43.3	55 18.7	54 52.9	54 25.8	53 57.6	53 28.3	52 57.9	52 26.6	51 54.1	51 20.8	50 46.5	50 11.6	49 35.7	8	8
48	54 48.2	54 24.2	53 58.9	53 32.4	53 4.9	52 36.3	52 6.5	51 35.9	51 4.2	50 31.5	49 58.1	49 23.8	48 48.7	12	12
44	53 52.9	53 29.3	53 4.7	52 38.8	52 11.9	51 44.0	51 14.8	50 44.8	50 13.7	49 41.9	49 9.1	48 35.5	48 1.2	16	16
40	52 57.3	52 34.3	52 10.1	51 44.9	51 18.5	50 51.1	50 22.7	49 53.3	49 22.9	48 51.7	48 19.6	47 46.8	47 13.1	20	20
36	52 1.5	51 39.1	51 15.4	50 50.6	50 24.8	49 58.1	49 30.2	49 1.6	48 31.7	48 1.2	47 29.8	46 57.6	46 24.6	24	24
32	51 5.6	50 43.6	50 20.4	49 56.1	49 30.9	49 4.7	48 37.5	48 9.3	47 40.2	47 10.3	46 39.4	46 7.9	45 35.6	28	28
28	50 9.5	49 48.0	49 25.2	49 1.5	48 36.7	48 11.0	47 44.3	47 16.8	46 48.3	46 19.0	45 48.8	45 17.9	44 46.2	32	32
24	49 13.2	48 52.0	48 29.9	48 6.5	47 42.3	47 17.2	46 50.9	46 24.0	45 56.0	45 27.4	44 57.8	44 27.5	43 56.4	36	36
20	48 16.8	47 56.1	47 34.2	47 11.4	46 47.6	46 23.0	45 57.4	45 30.9	45 3.5	44 35.4	44 6.4	43 36.7	43 6.3	40	40
16	47 20.3	46 59.9	46 38.5	46 16.1	45 52.8	45 28.6	45 3.5	44 37.6	44 10.6	43 43.1	43 14.7	42 45.6	42 15.8	44	44
12	46 23.6	46 3.7	45 42.5	45 20.6	44 57.7	44 34.1	44 9.3	43 43.9	43 17.6	42 50.5	42 22.7	41 54.1	41 24.9	48	48
8	45 26.9	45 7.1	44 46.5	44 24.9	44 2.5	43 39.2	43 15.0	42 50.1	42 24.2	41 57.7	41 30.3	41 2.4	40 33.7	52	52
4	44 30.0	44 10.6	43 50.3	43 29.1	43 7.0	42 44.2	42 20.5	41 56.0	41 30.6	41 4.6	40 37.8	40 10.3	39 42.2	2 56	2 56
21 0	43 33.0	43 13.9	42 54.0	42 33.1	42 11.5	41 49.0	41 25.7	41 1.7	40 36.8	40 11.3	39 45.0	39 18.1	38 50.5	3 0	3 0

LATITUDE 13°.													
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	64 0	0	63 0	0	62 0	0	61 0	0	60 0	0	59 0	0	0 0
23 56	63 58	8	62 58	8	61 58	9	60 59	1	59 59	0	58 59	1	4
52	63 55	5	62 55	7	61 55	8	60 55	9	59 56	1	58 56	3	8
48	63 49	8	62 50	4	61 50	6	60 50	9	59 51	3	58 51	6	12
44	63 42	0	62 42	8	61 43	3	60 44	0	59 44	5	58 45	0	16
40	63 31	9	62 33	1	61 34	0	60 35	0	59 35	8	58 36	6	20
36	63 19	6	62 21	4	61 22	6	60 24	0	59 25	2	58 26	5	24
32	63 5	4	62 7	5	61 9	3	60 11	2	59 12	9	58 14	5	28
28	62 49	0	61 51	8	60 54	0	59 56	5	58 58	6	58 0	7	32
24	62 30	7	61 34	0	60 37	0	59 39	9	58 42	7	57 45	2	36
20	62 10	4	61 14	5	60 18	1	59 21	7	58 24	9	57 28	1	40
16	61 48	3	60 53	1	59 57	4	59 1	6	58 5	6	57 9	4	44
12	61 24	4	60 30	0	59 35	0	58 40	0	57 44	6	56 49	0	48
8	60 58	8	60 5	2	59 11	1	58 16	8	57 22	1	56 27	1	52
4	60 31	6	59 38	9	58 45	5	57 52	0	56 58	0	56 3	8	0 56
23 0	60 2	9	59 11	0	58 18	4	57 25	6	56 32	5	55 38	9	1 0
22 56	59 32	6	58 41	6	57 49	8	56 57	9	56 5	4	55 12	8	4
52	59 1	0	58 10	8	57 20	0	56 28	8	55 37	2	54 45	2	8
48	58 27	9	57 38	7	56 48	6	55 58	5	55 7	6	54 16	4	12
44	57 53	7	57 5	2	56 16	2	55 26	8	54 36	8	53 46	4	16
40	57 18	1	56 30	8	55 42	5	54 54	0	54 4	8	53 15	2	20
36	56 41	6	55 55	0	55 7	7	54 20	0	53 31	6	52 42	9	24
32	56 3	8	55 18	2	54 31	7	53 44	9	52 57	4	52 9	4	28
28	55 25	1	54 40	5	53 54	8	53 8	8	52 22	1	51 35	0	32
24	54 45	5	54 1	6	53 16	9	52 31	7	51 45	9	50 59	5	36
20	54 4	8	53 21	9	52 38	0	51 53	7	51 8	6	50 23	1	40
16	53 23	4	52 41	2	51 58	3	51 14	7	50 30	6	49 45	8	44
12	52 41	0	51 59	9	51 17	6	50 35	0	49 51	6	49 7	7	48
8	51 58	1	51 17	5	50 36	3	49 54	4	49 11	8	48 28	8	52
4	51 14	2	50 34	1	49 54	0	49 13	0	48 31	3	47 49	0	1 56
22 0	50 29	9	49 51	0	49 11	2	48 31	0	47 50	0	47 8	4	2 0
21 56	49 44	7	49 6	7	48 27	7	47 48	2	47 8	0	46 27	2	4
52	48 59	0	48 21	8	47 43	5	47 4	8	46 25	3	45 45	3	8
48	48 12	8	47 36	2	46 58	7	46 20	8	45 42	0	45 2	7	12
44	47 25	9	46 50	1	46 13	3	45 36	1	44 58	1	44 19	5	16
40	46 38	6	46 3	5	45 27	5	44 50	9	44 13	7	43 35	8	20
36	45 50	7	45 16	4	44 41	0	44 5	2	43 28	6	42 51	9	24
32	45 2	5	44 28	7	43 54	1	43 18	9	42 43	1	42 6	7	28
28	44 13	7	43 40	7	43 6	4	42 32	2	41 57	1	41 21	3	32
24	43 24	6	42 52	1	42 18	9	41 45	0	41 10	5	40 35	5	36
20	42 35	0	42 3	3	41 30	6	40 57	5	40 23	6	39 49	2	40
16	41 45	1	41 13	9	40 41	9	40 9	5	39 36	2	39 2	3	44
12	40 54	9	40 24	3	39 52	9	39 21	0	38 48	3	38 15	2	48
8	40 4	3	39 34	3	39 3	5	38 32	1	38 0	2	37 27	7	52
4	39 13	4	38 43	9	38 13	7	37 43	0	37 11	6	36 39	7	2 56
21 0	38 22	1	37 53	2	37 23	6	36 53	5	36 22	6	35 51	4	3 0

TRUE ALTITUDE OF BODY.

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LATITUDE 13°.

Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.			
Declination																Declination			
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.			
h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.	h. m.			
15	0	43	33.0	43	13.9	42	54.0	42	33.1	42	11.5	41	49.0	41	25.7	41	0		
	4	42	35.9	42	17.2	41	57.5	41	37.0	41	15.7	40	53.7	40	30.8	40	4		
	8	41	38.7	41	20.3	41	0.9	40	40.8	40	19.8	39	58.2	39	35.7	39	8		
	12	40	41.5	40	23.3	40	4.3	39	44.4	39	23.8	39	2.6	38	40.4	38	12		
	16	39	44.1	39	26.2	39	7.4	38	47.9	38	27.7	38	6.8	37	45.1	37	16		
	20	40	38.4	38	29.0	38	10.6	37	51.3	37	31.4	37	10.8	36	49.4	36	20		
	24	36	37.4	37	31.8	37	13.6	36	54.6	36	35.0	36	14.8	35	53.8	35	24		
	28	32	36.5	36	34.4	36	16.5	35	57.9	35	38.5	35	18.6	34	57.9	34	28		
	32	28	35.5	35	37.1	35	19.4	35	1.0	34	42.0	34	22.3	34	1.9	33	32		
	36	24	34.5	34	39.6	34	22.1	34	4.0	33	45.2	33	25.9	33	5.8	32	36		
	40	20	33.5	33	42.1	33	24.9	33	6.9	32	48.4	32	29.4	32	9.6	31	40		
	44	16	33.0	32	44.6	32	27.5	32	9.7	31	51.5	31	32.7	31	13.3	30	44		
	48	12	32.1	31	46.9	31	30.0	31	12.6	30	54.6	30	36.0	30	16.9	29	48		
	52	8	31.5	30	49.2	30	32.5	30	15.3	29	57.5	29	39.3	29	20.4	29	52		
15	56	4	30	7.3	29	51.4	29	35.0	29	17.9	29	0.4	28	42.4	28	23.8	28	56	
	0	29	9.4	28	53.6	28	37.3	28	20.6	28	3.2	27	45.5	27	27.1	27	8	0	
	4	28	11.4	27	55.8	27	39.7	27	23.1	27	6.0	26	48.4	26	30.3	26	7	56	
	8	27	13.3	26	57.9	26	42.0	26	25.5	26	8.6	25	51.4	25	33.4	25	8	52	
	12	26	15.3	26	0.0	25	44.2	25	27.9	25	11.2	24	54.1	24	36.5	24	12	48	
	16	25	17.2	25	2.1	24	46.3	24	30.3	24	13.8	23	56.9	23	39.5	23	16	44	
	20	24	19.0	24	4.0	23	48.5	23	32.6	23	16.3	22	59.6	22	42.4	22	20	40	
	24	23	20.9	23	6.0	22	50.6	22	34.9	22	18.7	22	2.2	21	45.2	21	24	36	
	28	32	22.7	22	7.9	21	52.7	21	37.1	21	21.1	21	4.8	20	48.0	20	28	32	
	32	28	21.4	21	9.8	20	54.7	20	39.3	20	23.5	20	7.3	19	50.7	19	32	28	
	36	24	20.6	20	11.7	19	56.7	19	41.4	19	25.7	19	9.8	18	53.4	18	36	24	
	40	20	19.2	19	13.5	18	58.7	18	43.5	18	27.9	18	12.2	17	56.0	17	40	20	
	44	16	18.2	18	15.3	18	0.6	17	45.5	17	30.2	17	14.5	16	58.6	16	44	16	
	48	12	17.3	17	17.1	17	2.5	16	47.5	16	32.3	16	16.9	16	1.0	15	48	12	
	52	8	16.3	16	18.9	16	4.3	15	49.5	15	34.4	15	19.1	15	3.5	14	52	8	
16	56	4	15	34.8	15	20.6	15	6.2	14	51.5	14	36.5	14	21.4	14	5.9	13	56	
	0	14	36.4	14	22.3	14	8.0	13	53.4	13	38.6	13	23.6	13	8.2	12	52	0	
	4	13	38.0	13	24.0	13	9.8	12	55.3	12	40.6	12	25.7	12	10.5	11	55	4	
	8	12	39.7	12	25.7	12	11.6	11	57.1	11	42.6	11	27.8	11	12.8	10	57	8	
	12	11	41.3	11	27.4	11	13.3	10	59.0	10	44.5	10	29.9	10	15.0	10	0.0	9	
	16	10	42.9	10	29.1	10	15.0	10	0.8	9	46.5	9	31.9	9	17.2	9	2.4	8	
	20	9	44.5	9	30.7	9	16.7	9	2.6	8	48.3	8	34.0	8	19.3	8	4.7	7	
	24	8	46.1	8	32.3	8	18.5	8	4.4	7	50.2	7	35.9	7	21.5	7	6.9	6	
	28	32	7.4	7	34.0	7	20.1	7	6.1	6	52.0	6	37.9	6	23.6	6	9.2	5	
	32	28	6.4	6	35.5	6	21.8	6	7.9	5	53.9	5	39.8	5	25.6	5	11.4	4	
	36	24	5.5	5	37.2	5	23.4	5	9.6	4	55.7	4	41.7	4	27.6	4	13.5	3	
	40	20	4.5	4	38.7	4	25.1	4	11.2	3	57.4	3	43.6	3	29.6	3	15.6	2	
	44	16	3.5	3	40.3	3	26.6	3	13.0	2	59.2	2	45.5	2	31.6	2	17.7	1	
	48	12	2.5	2	41.8	2	28.2	2	14.6	2	1.0	1	47.3	1	33.5	1	19.8	0	
	52	8	1.5	1	43.5	1	29.8	1	16.3	1	2.6	0	49.1	0	35.4	0	21.8	0	
17	56	4	0	58.5	0	45.0	0	31.5	0	17.9	0	4.3	0	9.1	0	22.7	0	36	2
	0	0	0.0	0	13.5	0	27.0	0	40.5	0	53.9	0	1.7	0	20.8	0	34.3	1	47
	4																		2
	8																		1
	12																		0
	16																		0
	20																		0
	24																		0
	28																		0
	32																		0
	36																		0
	40																		0
	44																		0
	48																		0
	52																		0
17	56	4	0	58.5	0	45.0	0	31.5	0	17.9	0	4.3	0	9.1	0	22.7	0	36	2
	0	0	0.0	0	13.5	0	27.0	0	40.5	0	53.9	0	1.7	0	20.8	0	34.3	1	47
	4																		2
	8																		1
	12																		0
	16																		0
	20																		0
	24																		0
	28																		0
	32																		0
	36																		0
	40																		0
	44																		0
	48																		0
	52																		0
17	56	4	0	58.5	0	45.0	0	31.5	0	17.9	0	4.3	0	9.1	0	22.7	0	36	2
	0	0	0.0	0	13.5	0	27.0	0	40.5	0	53.9	0	1.7	0	20.8	0	34.3	1	47
	4																		2
	8																		1
	12																		0
	16																		0
	20											</							

LATITUDE 13°.															
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.	
		Declination													
Declination		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.
Same Name.	Contrary Name.														
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.
15 0	21 0	38 22.1	37 53.2	37 23.6	36 53.5	36 22.6	35 51.4	35 19.5	34 47.1	34 14.1	33 40.8	33 6.9	32 32.5	3 0	9 0
4	20 56	37 30.5	37 2.3	36 33.2	36 3.6	35 33.5	35 2.7	34 31.4	33 59.5	33 27.3	32 54.5	32 21.3	31 47.5	4	8 56
8	52	36 38.8	36 11.0	35 42.4	35 13.5	34 43.8	34 13.7	33 43.0	33 11.7	32 40.0	32 7.9	31 35.3	31 2.1	8	52
12	48	35 46.7	35 19.4	34 51.4	34 23.0	33 53.9	33 24.3	32 54.3	32 23.5	31 52.4	31 20.9	30 48.9	30 16.4	12	48
16	44	34 54.4	34 27.7	34 0.2	33 32.2	33 3.7	32 34.7	32 5.2	31 35.0	31 4.5	30 33.5	30 2.2	29 30.2	16	44
20	40	34 1.9	33 35.6	33 8.7	32 41.2	32 13.2	31 44.8	31 15.8	30 46.2	30 16.3	29 45.9	29 15.1	28 43.7	20	40
24	36	33 9.2	32 43.4	32 16.8	31 50.0	31 22.5	30 54.5	30 26.1	29 57.1	29 27.7	28 57.9	28 27.7	27 56.9	24	36
28	32	32 16.2	31 50.8	31 24.8	30 58.4	30 31.4	30 4.0	29 36.1	29 7.7	28 38.9	28 9.6	27 40.0	27 9.8	28	32
32	28	31 22.9	30 58.1	30 32.6	30 6.7	29 40.2	29 13.3	28 45.9	28 17.9	27 49.7	27 21.0	26 51.9	26 22.3	32	28
36	24	30 29.6	30 5.1	29 40.1	29 14.7	28 48.7	28 22.3	27 55.4	27 28.0	27 0.2	26 32.1	26 3.6	25 34.6	36	24
40	20	29 36.0	29 12.0	28 47.4	28 22.5	27 57.0	27 31.0	27 4.6	26 37.8	26 10.6	25 43.0	25 15.0	24 46.5	40	20
44	16	28 42.3	28 18.7	27 54.6	27 30.0	27 5.0	26 39.5	26 13.7	25 47.3	25 20.6	24 53.6	24 26.1	23 58.2	44	16
48	12	27 48.3	27 25.2	27 1.4	26 37.4	26 12.8	25 47.9	25 22.5	24 56.6	24 30.4	24 3.9	23 37.0	23 9.6	48	12
52	8	26 54.2	26 31.5	26 8.2	25 44.5	25 20.5	24 56.0	24 31.1	24 5.7	23 40.1	23 14.0	22 47.6	22 20.8	52	8
15 56	4	26 0.0	25 37.7	25 14.7	24 51.6	24 27.9	24 3.9	23 39.4	23 14.6	22 49.4	22 23.8	21 58.0	21 31.7	3 56	4
16 0	20 0	25 5.6	24 43.6	24 21.2	23 58.4	23 35.2	23 11.6	22 47.6	22 23.2	21 58.5	21 33.5	21 8.2	20 42.3	4 0	8 0
4	19 56	24 11.0	23 49.5	23 27.4	23 5.0	22 42.2	22 19.1	21 55.6	21 31.7	21 7.4	20 42.9	20 18.1	19 52.8	4	7 56
8	52	23 16.3	22 55.2	22 33.5	22 11.6	21 49.2	21 26.5	21 3.4	20 39.9	20 16.2	19 52.0	19 27.8	19 3.0	8	52
12	48	22 21.5	22 0.7	21 39.4	21 17.9	20 55.9	20 33.6	20 11.0	19 48.0	19 24.6	19 1.1	18 37.2	18 13.0	12	48
16	44	21 26.6	21 6.2	20 45.2	20 24.1	20 2.5	19 40.6	19 18.5	18 55.8	18 33.1	18 9.9	17 46.6	17 22.8	16	44
20	40	20 31.5	20 11.4	19 50.9	19 30.1	19 8.9	18 47.5	18 25.7	18 3.6	17 41.2	17 18.6	16 55.6	16 32.4	20	40
24	36	19 36.3	19 16.6	18 56.4	18 36.0	18 15.2	17 54.1	17 32.8	17 11.1	16 49.2	16 27.0	16 4.6	15 41.8	24	36
28	32	18 41.0	18 21.6	18 1.8	17 41.8	17 21.4	17 0.7	16 39.8	16 18.5	15 57.0	15 35.3	15 13.4	14 51.1	28	32
32	28	17 45.6	17 26.6	17 7.1	16 47.4	16 27.4	16 7.1	15 46.6	15 25.7	15 4.7	14 43.4	14 21.9	14 0.1	32	28
36	24	16 50.1	16 31.4	16 12.2	15 52.9	15 33.3	15 13.4	14 53.3	14 32.8	14 12.2	13 51.4	13 30.4	13 9.0	36	24
40	20	15 54.6	15 36.1	15 17.3	14 48.3	14 39.0	14 19.5	13 59.8	13 39.8	13 19.6	12 59.2	12 38.6	12 17.7	40	20
44	16	14 58.8	14 40.7	14 22.2	14 3.6	13 44.7	13 25.5	13 6.2	12 46.6	12 26.8	12 6.8	11 46.7	11 26.3	44	16
48	12	14 3.0	13 45.2	13 27.1	13 8.7	12 50.2	12 31.5	12 12.5	11 53.2	11 33.9	11 14.4	10 54.6	10 34.7	48	12
52	8	13 7.1	12 49.6	12 31.8	12 13.8	11 55.6	11 37.2	11 18.6	10 59.8	10 40.9	10 21.7	10 2.5	9 42.9	52	8
16 56	4	12 11.1	11 53.9	11 36.4	11 18.8	11 0.9	10 42.9	10 24.7	10 6.2	9 47.7	9 29.0	9 10.1	8 51.0	4 56	4
17 0	19 0	11 15.0	10 58.1	10 40.9	10 23.6	10 6.1	9 48.5	9 30.6	9 12.5	8 54.4	8 36.0	8 17.7	7 59.0	5 0	7 0
4	18 56	10 18.9	10 2.3	9 45.4	9 28.4	9 11.2	8 53.9	8 36.4	8 18.7	8 0.9	7 43.1	7 25.1	7 6.8	4	6 56
8	52	9 22.7	9 6.4	8 49.7	8 33.1	8 16.2	7 59.2	7 42.1	7 24.8	7 7.4	6 49.9	6 32.3	6 14.5	8	52
12	48	8 26.5	8 10.4	7 54.0	7 37.7	7 21.1	7 4.5	6 47.6	6 30.8	6 13.8	5 56.7	5 39.5	5 22.1	12	48
16	44	7 30.0	7 14.3	6 58.2	6 42.2	6 25.9	6 9.6	5 53.2	5 36.6	5 20.0	5 3.3	4 46.6	4 29.6	16	44
20	40	6 33.6	6 18.1	6 2.4	5 46.6	5 30.6	5 14.7	4 58.6	4 42.4	4 26.1	4 9.8	3 53.5	3 37.0	20	40
24	36	5 37.1	5 21.9	5 6.4	4 50.9	4 35.3	4 19.7	4 3.9	3 48.0	3 32.2	3 16.2	3 0.3	2 44.2	24	36
28	32	4 40.6	4 25.6	4 10.3	3 55.1	3 39.9	3 24.5	3 9.1	2 53.6	2 38.1	2 22.6	2 7.0	1 51.4	28	32
32	28	3 44.0	3 29.1	3 14.2	2 59.3	2 44.3	2 29.3	2 14.3	1 59.1	1 43.9	1 28.8	1 13.7	0 58.3	32	28
36	24	2 47.2	2 32.8	2 18.1	2 3.4	1 48.8	1 34.0	1 19.3	1 4.5	0 49.7	0 34.9	0 20.2	0 5.3	36	24
40	20	1 50.5	1 36.2	1 21.8	1 7.5	0 53.1	0 38.7	0 24.3	0 9.8	0 4.6	0 19.0	0 33.4	0 47.9	40	20
44	16	0 53.7	0 39.7	0 25.5	0 11.5	0 2.6	0 16.8	0 30.8	0 45.0	0 59.0	1 13.1	1 27.0	1 41.2	44	16
48	12	0 3.2	0 16.9	0 30.8	0 44.6	0 58.4	1 12.2	1 26.0	1 39.8	1 53.5	2 7.2	2 20.8	2 34.4	48	12
52	8	1 0.1	1 13.7	1 27.3	1 40.8	1 54.3	2 7.8	2 21.3	2 34.8	2 48.1	3 1.4	3 14.6	3 27.9	52	8
17 56	4	1 57.0	2 10.3	2 23.8	2 37.0	2 50.2	3 3.5	3 16.6	3 29.7	3 42.8	3 55.7	4 8.5	4 21.4	5 56	4
18 0	18 0	2 54.0	3 7.2	3 20.2	3 33.3	3 46.2	3 59.1	4 12.0	4 24.7	4 37.4	4 50.0	5 2.5	5 15.0	6 0	6 0

TRUE ALTITUDE OF BODY.

LATITUDE 14°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	76 0 0	77 0 0	78 0 0	79 0 0	80 0 0	81 0 0	82 0 0	83 0 0	84 0 0	85 0 0	86 0 0	87 0 0	88 0 0	0 0	0 0
23 56	75 57.9	76 57.9	77 57.4	78 57.3	79 57.1	80 56.8	81 56.3	82 55.9	83 55.3	84 54.3	85 52.9	86 50.7	87 46.5	4	4
52	75 51.6	76 50.9	77 49.9	78 49.2	79 48.5	80 47.2	81 45.7	82 43.7	83 41.3	84 37.8	85 32.8	86 25.2	87 12.4	8	8
48	75 41.3	76 39.9	77 38.0	78 36.2	79 34.3	80 31.6	81 28.3	82 24.2	83 19.0	84 12.0	85 2.3	86 48.4	87 27.5	12	12
44	75 27.0	76 24.7	77 21.9	78 18.6	79 15.2	80 10.4	81 5.0	82 58.2	83 49.7	84 38.8	85 24.2	86 4.6	87 37.1	16	16
40	75 9.0	76 5.5	77 1.4	77 56.6	78 51.3	79 44.6	80 36.3	81 26.7	82 14.8	83 59.9	84 40.9	85 16.2	86 44.0	20	20
36	74 47.5	75 42.8	76 37.0	77 30.4	78 23.2	79 14.1	80 3.2	81 50.7	82 35.5	83 17.3	84 53.8	85 25.1	86 49.3	24	24
32	74 22.7	75 16.4	76 8.7	77 0.3	77 51.3	78 40.0	79 26.7	80 10.9	81 52.7	82 30.7	83 4.1	84 32.2	85 53.5	28	28
28	73 54.9	74 47.1	75 37.8	76 27.4	77 15.9	78 2.3	79 46.7	80 28.0	81 7.0	82 42.1	83 12.7	84 38.0	85 57.5	32	32
24	73 24.3	74 14.8	75 3.8	75 51.4	76 37.8	77 22.0	78 4.0	79 43.3	80 19.2	81 51.9	82 19.9	83 42.9	84 0.3	36	36
20	72 51.2	73 39.9	74 27.2	75 13.0	75 57.5	76 39.3	77 19.2	78 55.9	79 29.9	80 0.2	81 25.8	82 47.1	83 1.0	40	40
16	72 15.8	73 3.0	73 48.3	74 32.4	75 14.9	75 55.0	76 32.5	77 6.9	78 39.2	79 7.2	80 31.3	81 50.7	82 5.7	44	44
12	71 38.4	72 23.9	73 7.6	73 49.8	74 30.6	75 8.7	76 17.3	77 42.7	78 13.6	79 36.1	80 77.5	81 54.3	82 8.0	48	48
8	70 59.1	71 43.0	72 25.0	73 5.7	73 44.6	74 20.9	75 55.0	76 25.9	77 54.2	78 19.2	79 40.4	80 57.6	81 10.6	52	52
4	70 18.0	71 0.3	71 40.9	72 20.0	72 57.2	73 31.9	74 4.4	75 34.0	76 0.6	77 24.0	78 44.0	79 0.6	80 12.9	0 56	56
23 0	69 35.5	70 16.4	70 55.5	71 33.0	72 8.9	72 42.0	73 13.0	74 41.0	75 6.5	76 28.6	77 47.8	78 3.3	79 15.1	1 0	0
22 56	68 51.7	69 31.2	70 8.8	70 44.9	71 19.3	71 51.2	72 20.6	73 47.4	74 11.7	75 33.0	76 51.0	77 5.7	78 17.0	4	4
52	68 6.6	68 44.8	69 21.1	69 55.9	70 28.9	70 59.4	71 27.7	72 53.3	73 16.6	74 36.8	75 54.2	76 8.2	77 19.0	8	8
48	67 20.4	67 57.4	68 32.5	69 5.9	69 37.7	70 6.9	70 34.1	71 58.9	72 21.0	73 40.4	74 57.0	75 10.7	76 21.2	12	12
44	66 33.2	67 9.0	67 42.9	68 15.2	68 45.7	69 14.0	69 40.1	70 8.7	71 25.2	72 43.8	73 59.8	74 13.0	75 23.2	16	16
40	65 45.1	66 19.8	66 52.5	67 23.7	67 53.3	68 20.5	68 45.6	69 8.4	69 29.0	70 47.0	71 2.5	72 15.2	73 25.0	20	20
36	64 56.3	65 29.8	66 1.6	66 31.6	67 0.4	67 26.6	67 50.7	68 12.8	68 32.6	69 50.1	70 5.0	71 16.9	72 26.8	24	24
32	64 6.6	64 39.1	65 9.5	65 39.2	66 6.7	66 32.2	66 55.6	67 16.9	67 36.1	68 52.8	69 7.3	70 19.3	71 28.6	28	28
28	63 16.4	63 47.9	64 17.9	64 46.1	65 12.8	65 37.4	66 0.1	66 20.8	66 39.3	67 55.5	68 9.5	69 21.3	70 30.5	32	32
24	62 25.5	62 56.2	63 25.1	63 52.6	64 18.5	64 42.4	65 4.4	65 24.3	66 42.3	67 58.1	68 11.8	69 23.2	70 32.4	36	36
20	61 34.1	62 3.9	62 32.0	62 58.7	63 23.9	63 47.1	64 8.5	64 27.7	65 45.3	66 0.7	66 14.0	67 25.3	68 34.2	40	40
16	60 42.2	61 11.2	61 38.4	62 4.4	62 28.9	62 51.5	63 12.1	63 31.0	63 48.0	64 3.1	64 16.3	65 27.1	66 36.0	44	44
12	59 49.9	60 18.1	60 44.7	61 9.9	61 33.7	61 55.5	62 15.8	62 34.1	62 50.8	63 5.5	63 18.3	64 29.1	65 37.7	48	48
8	58 57.0	59 24.5	59 50.5	60 15.1	60 38.1	60 59.5	61 19.2	61 37.2	61 53.4	62 7.8	62 20.4	63 30.9	64 39.6	52	52
4	58 3.9	58 30.8	58 56.0	59 19.8	59 42.5	60 3.2	60 22.5	60 40.0	60 56.0	61 10.0	61 22.3	62 32.8	63 41.3	1 56	56
22 0	57 10.3	57 36.5	58 1.1	58 24.5	58 46.5	59 6.9	59 25.7	59 42.8	59 58.4	60 12.2	60 24.3	60 34.6	60 43.1	2 0	0
21 56	56 16.5	56 42.0	57 6.1	57 28.8	57 50.5	58 10.3	58 28.8	58 45.5	59 0.7	59 14.3	59 26.2	59 36.5	59 44.9	4	4
52	55 22.3	55 47.3	56 10.8	56 33.1	56 54.2	57 13.6	57 31.7	57 48.0	58 3.0	58 16.3	58 28.1	58 38.2	58 46.7	8	8
48	54 27.9	54 52.2	55 15.3	55 37.2	55 57.8	56 16.8	56 34.4	56 50.5	57 5.2	57 18.4	57 30.0	57 40.0	57 48.5	12	12
44	53 33.2	53 57.1	54 19.6	54 41.0	55 1.3	55 19.8	55 37.1	55 52.9	56 7.5	56 20.4	56 31.9	56 41.8	56 50.2	16	16
40	52 38.3	53 1.7	53 23.7	53 44.6	54 4.5	54 22.8	54 39.8	54 55.3	55 9.6	55 22.4	55 33.8	55 43.6	55 52.0	20	20
36	51 43.2	52 6.1	52 27.7	52 48.2	53 7.6	53 25.6	53 42.4	53 57.6	54 11.7	54 24.3	54 35.6	54 45.5	54 53.8	24	24
32	50 47.7	51 10.4	51 31.4	51 51.6	52 10.6	52 28.3	52 44.8	52 59.9	53 13.7	53 26.2	53 37.4	53 47.3	53 55.7	28	28
28	49 52.3	50 14.4	50 35.2	50 54.9	51 13.6	51 31.0	51 47.1	52 2.1	52 15.8	52 28.1	52 39.3	52 49.0	52 57.4	32	32
24	48 56.6	49 18.3	49 38.6	49 58.1	50 16.5	50 33.6	50 49.5	51 4.1	51 17.8	51 30.1	51 41.1	51 50.7	51 59.2	36	36
20	48 0.7	48 21.9	48 42.1	49 1.1	49 19.3	49 36.1	49 51.8	50 6.3	50 19.6	50 31.9	50 42.9	50 52.6	51 1.0	40	40
16	47 4.7	47 25.6	47 45.3	48 1.1	48 21.9	48 38.5	48 54.0	49 8.3	49 21.7	49 33.6	49 44.6	49 54.4	50 2.9	44	44
12	46 8.6	46 29.0	46 48.5	47 6.9	47 24.6	47 40.9	47 56.3	48 10.4	48 23.5	48 35.5	48 46.5	48 56.2	49 4.7	48	48
8	45 12.3	45 32.5	45 51.5	46 9.8	46 27.1	46 43.3	46 58.4	47 12.4	47 25.4	47 37.3	47 48.3	47 57.9	48 6.6	52	52
4	44 15.9	44 35.7	44 54.5	45 12.4	45 29.6	45 45.6	46 0.5	46 14.4	46 27.3	46 39.2	46 50.0	46 59.7	47 8.4	2 56	56
21 0	43 19.4	43 38.9	43 57.4	44 15.2	44 32.0	44 47.7	45 2.6	45 16.4	45 29.2	45 41.0	45 51.8	46 1.5	46 10.2	3 0	0

LATITUDE 14°.													
Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	89 0	0	90 0	0	89 0	0	88 0	0	87 0	0	86 0	0	0 0
23 56	88 36	3	89 1	6	88 36	5	87 46	7	86 50	9	85 53	2	4 4
52	87 48	8	88 3	5	87 49	3	87 13	1	86 26	0	85 33	7	8 8
48	86 55	0	87 5	3	86 55	7	86 28	7	85 50	0	85 4	1	12 8
44	85 59	0	86 7	1	86 0	0	85 38	9	85 7	0	84 27	1	16 8
40	85 2	2	85 8	9	85 3	4	84 46	3	84 19	4	83 44	8	20 8
36	84 4	9	84 10	7	84 6	4	83 52	2	83 29	2	82 58	9	24 8
32	83 7	1	83 12	4	83 9	0	82 56	9	82 37	1	82 10	3	28 8
28	82 9	4	82 14	3	82 11	5	82 1	1	81 43	7	81 19	9	32 8
24	81 11	5	81 16	0	81 13	8	81 4	8	80 49	4	80 23	1	36 8
20	80 13	4	80 17	8	80 16	1	80 8	2	79 54	6	79 35	6	40 8
16	79 15	7	79 19	8	79 18	3	79 11	4	78 59	2	78 41	9	44 8
12	78 17	6	78 21	5	78 20	4	78 14	4	78 3	4	77 47	9	48 8
8	77 19	3	77 23	1	77 22	9	77 17	1	77 7	4	76 52	9	52 8
4	76 21	2	76 24	9	76 24	8	76 20	0	76 11	0	75 57	8	0 56
23 0	75 23	2	75 26	8	75 27	0	75 22	5	75 14	5	75 2	7	1 0
22 56	74 25	0	74 28	8	74 29	1	74 25	1	74 17	9	74 7	0	4 4
52	73 26	7	73 30	6	73 31	1	73 27	6	73 21	0	73 11	1	8 8
48	72 28	5	72 32	1	72 33	0	72 30	1	72 24	2	72 15	0	12 8
44	71 30	2	71 34	1	71 35	1	71 32	7	71 27	3	71 18	9	16 8
40	70 32	1	70 35	9	70 37	2	70 35	0	70 30	4	70 22	7	20 8
36	69 33	8	69 37	9	69 39	3	69 37	5	69 33	2	69 26	2	24 8
32	68 35	6	68 39	7	68 41	5	68 39	9	68 36	0	68 29	5	28 8
28	67 37	5	67 41	5	67 43	5	67 42	3	67 38	9	67 32	9	32 8
24	66 39	3	66 43	4	66 45	4	66 44	6	66 41	7	66 36	3	36 8
20	65 41	1	65 45	2	65 47	5	65 46	9	65 44	5	65 39	5	40 8
16	64 42	7	64 47	2	64 49	5	64 49	3	64 47	1	64 42	8	44 8
12	63 44	6	63 48	9	63 51	6	63 51	6	63 49	9	63 45	9	48 8
8	62 46	4	62 50	9	62 53	5	62 54	0	62 52	5	62 49	0	52 8
4	61 48	2	61 52	7	61 55	7	61 56	2	61 55	2	61 52	1	56 8
22 0	60 49	9	60 54	7	60 57	7	60 58	6	60 57	8	60 55	2	2 0
21 56	59 51	7	59 56	5	59 59	8	60 0	9	60 59	58	60 55	2	4 4
52	58 53	6	58 58	4	59 1	9	59 3	3	59 3	1	59 1	58	8 8
48	57 55	3	58 0	4	58 4	0	58 5	6	58 5	7	58 4	1	12 8
44	56 57	2	57 2	3	57 6	1	57 8	0	57 8	4	57 7	1	16 8
40	55 59	0	56 4	3	56 8	1	56 10	3	56 10	9	56 10	1	20 8
36	55 0	9	55 6	2	55 10	3	55 12	6	55 13	6	55 13	0	24 8
32	54 2	7	54 8	2	54 12	4	54 15	0	54 16	2	54 16	0	28 8
28	53 4	6	53 10	1	53 14	6	53 17	3	53 18	9	53 19	0	32 8
24	52 6	4	52 12	2	52 16	7	52 19	7	52 21	5	52 21	9	36 8
20	51 8	4	51 14	1	51 18	9	51 22	1	51 24	1	51 24	8	40 8
16	50 10	2	50 16	2	50 21	1	50 24	5	50 26	7	50 27	8	44 8
12	49 12	1	49 18	2	49 23	3	49 26	9	49 29	4	49 30	6	48 8
8	48 14	1	48 20	2	48 25	5	48 29	2	48 32	0	48 33	7	52 8
4	47 16	0	47 22	3	47 27	7	47 31	6	47 34	7	47 36	6	56 8
21 0	46 17	9	46 24	4	46 29	9	46 34	1	46 37	4	46 39	5	3 0

LATITUDE 14°.																	
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°	
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	43 19.4	43 38.9	43 57.4	44 15.2	44 32.0	44 47.7	45 2.6	45 16.4	45 29.2	45 41.0	45 51.8	46 1.5	46 10.2		3	0
20	56	42 22.7	42 42.0	43 0.3	43 17.7	43 34.4	43 49.9	44 4.6	44 18.3	44 31.1	44 42.8	44 53.7	45 3.3	45 12.0		4	
	52	41 26.0	41 44.9	42 3.0	42 20.2	42 36.6	42 52.1	43 6.6	43 20.2	43 33.0	43 44.6	43 55.4	44 5.2	44 13.9		8	
	48	40 29.1	40 47.8	41 5.6	41 22.6	41 38.9	41 54.2	42 8.6	42 22.0	42 34.8	42 46.4	42 57.2	43 7.0	43 15.8		12	
	44	39 32.2	39 50.7	40 8.2	40 25.0	40 41.2	40 56.3	41 10.6	41 24.0	41 36.5	41 48.2	41 58.9	42 8.8	42 17.7		16	
	40	38 35.2	38 53.4	39 10.7	39 27.4	39 43.3	39 58.3	40 12.6	40 25.8	40 38.3	40 49.9	41 0.7	41 10.6	41 19.7		20	
	36	37 38.1	37 56.0	38 13.2	38 29.7	38 45.5	39 0.4	39 14.4	39 27.6	39 40.1	39 51.7	40 2.5	40 12.5	40 21.5		24	
	32	36 41.0	36 58.7	37 15.6	37 31.9	37 47.6	38 2.3	38 16.3	38 29.4	38 41.9	38 53.4	39 4.3	39 14.3	39 23.5		28	
	28	35 43.7	36 1.2	36 18.0	36 34.1	36 49.7	37 4.3	37 18.2	37 31.2	37 43.7	37 55.3	38 6.1	38 16.2	38 25.4		32	
	24	34 46.4	35 3.8	35 20.3	35 36.3	35 51.6	36 6.2	36 20.0	36 33.1	36 45.5	36 57.1	37 8.0	37 18.0	37 27.4		36	
	20	33 49.0	34 6.2	34 22.6	34 38.4	34 53.7	35 8.3	35 21.9	35 34.9	35 47.3	35 58.9	36 9.8	36 19.9	36 29.3		40	
	16	32 51.6	33 8.6	33 24.8	33 40.6	33 55.6	34 10.0	34 23.7	34 36.7	34 49.1	35 0.6	35 11.6	35 21.8	35 31.3		44	
	12	31 54.1	32 11.0	32 27.0	32 42.6	32 57.6	33 11.9	33 25.5	33 38.5	33 50.8	34 2.5	34 13.4	34 23.7	34 33.3		48	
	8	30 56.6	31 13.2	31 29.2	31 44.6	31 59.6	32 13.8	32 27.3	32 40.3	32 52.6	33 4.3	33 15.3	33 25.7	33 35.3		52	
	4	29 59.0	30 15.5	30 31.3	30 46.7	31 1.5	31 15.7	31 29.2	31 42.0	31 54.4	32 6.1	32 17.2	32 27.6	32 37.4	3	56	
20	0	29 1.3	29 17.7	29 33.4	29 48.6	30 3.4	30 17.4	30 31.0	30 43.8	30 56.2	31 7.9	31 19.0	31 29.6	31 39.4	4	0	
19	56	28 3.6	28 19.8	28 35.4	28 50.6	29 5.3	29 19.3	29 32.8	29 45.6	29 58.0	30 9.7	30 20.9	30 31.5	30 41.5		4	
	52	27 5.9	27 22.0	27 37.5	27 52.5	28 7.2	28 21.1	28 34.6	28 47.4	28 59.8	29 11.6	29 22.8	29 33.5	29 43.5		8	
	48	26 8.2	26 24.1	26 39.5	26 54.5	27 9.0	27 22.9	27 36.3	27 49.2	28 1.4	28 13.4	28 24.7	28 35.4	28 45.7		12	
	44	25 10.4	25 26.2	25 41.5	25 56.3	26 10.8	26 24.7	26 38.1	26 51.0	27 3.4	27 15.3	27 26.6	27 37.5	27 47.8		16	
	40	24 12.5	24 28.3	24 43.4	24 58.2	25 12.7	25 26.5	25 39.9	25 52.8	26 5.2	26 17.2	26 28.6	26 39.5	26 50.0		20	
	36	23 14.6	23 30.3	23 45.4	24 0.1	24 14.5	24 28.3	24 41.7	24 54.5	25 7.0	25 19.0	25 30.6	25 41.6	25 52.2		24	
	32	22 16.8	22 32.3	22 47.3	23 2.0	23 16.3	23 30.1	23 43.5	23 56.3	24 8.9	24 20.9	24 32.5	24 43.7	24 54.4		28	
	28	21 18.9	21 34.3	21 49.2	22 3.8	22 18.1	22 31.9	22 45.2	22 58.1	23 10.7	23 22.9	23 34.5	23 45.7	23 56.6		32	
	24	20 20.9	20 36.2	20 51.1	21 5.6	21 19.9	21 33.7	21 47.0	22 0.0	22 12.6	22 24.7	22 36.5	22 47.9	22 58.8		36	
	20	19 22.9	19 38.2	19 52.9	20 7.4	20 21.7	20 35.4	20 48.9	21 1.8	21 14.5	21 26.7	21 38.5	21 50.0	22 1.1		40	
	16	18 24.9	18 40.1	18 54.8	19 9.3	19 23.5	19 37.3	19 50.6	20 3.7	20 16.3	20 28.6	20 40.6	20 52.2	21 3.4		44	
	12	17 26.9	17 42.0	17 56.6	18 11.0	18 25.3	18 39.0	18 52.4	19 5.5	19 18.3	19 30.6	19 42.7	19 54.3	20 5.7		48	
	8	16 28.8	16 43.8	16 58.5	17 12.9	17 27.1	17 40.8	17 54.2	18 7.3	18 20.1	18 32.6	18 44.8	18 56.6	19 8.0		52	
	4	15 30.8	15 45.7	16 0.3	16 14.7	16 28.8	16 42.6	16 56.1	17 9.2	17 22.1	17 34.6	17 46.9	17 58.8	18 10.4	4	56	
19	0	14 32.6	14 47.6	15 2.1	15 16.5	15 30.6	15 44.4	15 57.9	16 11.1	16 24.0	16 36.7	16 49.0	17 1.1	17 12.8	5	0	
18	56	13 34.6	13 49.4	14 3.9	14 18.2	14 32.4	14 46.2	14 59.7	15 12.9	15 26.0	15 38.7	15 51.2	16 3.3	16 15.3		4	
	52	12 36.5	12 51.3	13 5.7	13 20.0	13 34.1	13 48.0	14 1.5	14 14.9	14 27.9	14 40.8	14 53.4	15 5.7	15 17.7		8	
	48	11 38.4	11 53.1	12 7.5	12 21.8	12 36.0	12 49.8	13 3.5	13 16.8	13 29.9	13 42.9	13 55.6	14 8.0	14 20.2		12	
	44	10 40.2	10 54.9	11 9.3	11 23.6	11 37.7	11 51.6	12 5.3	12 18.7	12 32.0	12 45.0	12 57.8	13 10.4	13 22.7		16	
	40	9 42.0	9 56.7	10 11.1	10 25.4	10 39.6	10 53.4	11 7.1	11 20.7	11 34.0	11 47.1	12 0.1	12 12.8	12 25.3		20	
	36	8 43.8	8 58.5	9 12.8	9 27.2	9 41.4	9 55.3	10 9.0	10 22.6	10 36.0	10 49.3	11 2.4	11 15.2	11 27.9		24	
	32	7 45.6	8 0.2	8 14.7	8 28.9	8 43.2	8 57.2	9 11.0	9 24.6	9 38.1	9 51.5	10 4.7	10 17.7	10 30.5		28	
	28	6 47.5	7 2.1	7 16.4	7 30.7	7 45.0	7 59.0	8 12.9	8 26.6	8 40.2	8 53.7	9 7.0	9 20.2	9 33.2		32	
	24	5 49.3	6 3.8	6 18.2	6 32.5	6 46.8	7 0.9	7 14.9	7 28.7	7 42.4	7 55.9	8 9.4	8 22.7	8 35.9		36	
	20	4 51.1	5 5.7	5 20.0	5 34.3	5 48.6	6 2.8	6 16.8	6 30.7	6 44.6	6 58.2	7 11.8	7 25.2	7 38.6		40	
	16	3 52.9	4 7.4	4 21.8	4 36.1	4 50.5	5 4.7	5 18.8	5 32.8	5 46.7	6 0.6	6 14.2	6 27.9	6 41.4		44	
	12	2 54.7	3 9.2	3 23.5	3 38.0	3 52.4	4 6.6	4 20.8	4 34.9	4 48.9	5 2.9	5 16.8	5 30.5	5 44.2		48	
	8	1 56.4	2 10.9	2 25.3	2 39.8	2 54.3	3 8.6	3 22.8	3 37.0	3 51.1	4 5.2	4 19.3	4 33.2	4 47.1		52	
	4	0 58.2	1 12.8	1 27.2	1 41.6	1 56.1	2 10.6	2 24.9	2 39.1	2 53.5	3 7.6	3 21.9	3 36.0	3 50.0	5	56	
18	0	0 0.0	0 14.6	0 29.1	0 43.6	0 58.0	1 12.5	1 27.0	1 41.4	1 55.8	2 10.2	2 24.5	2 38.8	2 53.0	6	0	

LATITUDE 14°.

Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
21 0	46 17.9	46 24.4	46 29.9	46 34.1	46 37.4	46 39.5	46 40.5	46 40.5	46 39.2	46 37.0	46 33.6	46 29.1	3 0
20 56	45 19.9	45 26.4	45 32.2	45 36.6	45 40.1	45 42.5	45 43.8	45 44.1	45 43.3	45 41.4	45 38.4	45 34.5	4
52	44 21.8	44 28.5	44 34.3	44 39.0	44 42.8	44 45.5	44 47.1	44 47.7	44 47.3	44 45.8	44 43.3	44 39.8	8
48	43 23.8	43 30.6	43 36.7	43 41.5	43 45.5	43 48.5	43 50.4	43 51.3	43 51.2	43 50.2	43 48.2	43 45.1	12
44	42 25.8	42 32.8	42 39.0	42 44.0	42 48.2	42 51.5	42 53.7	42 54.9	42 55.2	42 54.6	42 53.0	42 50.4	16
40	41 27.8	41 35.0	41 41.3	41 46.5	41 50.9	41 54.4	41 56.9	41 58.6	41 59.2	41 59.0	41 57.7	41 55.6	20
36	40 29.9	40 37.1	40 43.6	40 49.0	40 53.7	40 57.5	41 0.2	41 2.3	41 3.2	41 3.3	41 2.5	41 0.8	24
32	39 31.8	39 39.3	39 45.9	39 51.6	39 56.5	40 0.5	40 3.6	40 5.8	40 7.2	40 7.7	40 7.3	40 6.1	28
28	38 33.9	38 41.4	38 48.2	38 54.1	38 59.3	39 3.6	39 6.9	39 9.5	39 11.1	39 12.1	39 12.1	39 11.3	32
24	37 35.9	37 43.7	37 50.7	37 56.7	38 2.1	38 6.6	38 10.2	38 13.1	38 15.2	38 16.4	38 16.9	38 16.5	36
20	36 38.1	36 45.9	36 53.1	36 59.3	37 4.9	37 9.7	37 13.7	37 16.8	37 19.2	37 20.9	37 21.6	37 21.7	40
16	35 40.1	35 48.1	35 55.4	36 1.9	36 7.7	36 12.8	36 17.0	36 20.5	36 23.2	36 25.2	36 26.4	36 26.8	44
12	34 42.3	34 50.4	34 57.9	35 4.5	35 10.6	35 15.9	35 20.4	35 24.2	35 27.3	35 29.6	35 31.1	35 32.0	48
8	33 44.4	33 52.7	34 0.4	34 7.2	34 13.4	34 19.1	34 23.8	34 28.0	34 31.3	34 34.0	34 35.9	34 37.2	52
4	32 46.6	32 55.0	33 2.9	33 9.9	33 16.4	33 22.2	33 27.3	33 31.7	33 35.4	33 38.4	33 40.8	33 42.4	3 56
20 0	31 48.7	31 57.3	32 5.4	32 12.6	32 19.3	32 25.4	32 30.7	32 35.4	32 39.4	32 42.9	32 45.6	32 47.7	4 0
19 56	30 51.0	30 59.7	31 7.9	31 15.3	31 22.3	31 28.6	31 34.2	31 39.2	31 43.6	31 47.3	31 50.4	31 52.8	4
52	29 53.2	30 2.1	30 10.5	30 18.1	30 25.3	30 31.8	30 37.6	30 43.0	30 47.7	30 51.8	30 55.2	30 58.1	8
48	28 55.4	29 4.5	29 13.1	29 20.9	29 28.2	29 35.0	29 41.2	29 46.8	29 51.9	29 56.2	30 0.1	30 3.3	12
44	27 57.7	28 6.9	28 15.7	28 23.7	28 31.3	28 38.3	28 44.7	28 50.7	28 56.0	29 0.8	29 4.9	29 8.6	16
40	27 0.0	27 9.3	27 18.2	27 26.5	27 34.4	27 41.6	27 48.4	27 54.5	28 0.2	28 5.3	28 9.8	28 13.8	20
36	26 2.3	26 11.7	26 20.9	26 29.4	26 37.5	26 45.0	26 51.9	26 58.5	27 4.4	27 9.9	27 14.7	27 19.2	24
32	25 4.6	25 14.3	25 23.6	25 32.2	25 40.6	25 48.4	25 55.6	26 2.4	26 8.6	26 14.4	26 19.7	26 24.5	28
28	24 7.0	24 16.8	24 26.3	24 35.2	24 43.7	24 51.7	24 59.3	25 6.4	25 12.9	25 19.1	25 24.7	25 29.8	32
24	23 9.4	23 19.4	23 29.1	23 38.1	23 46.9	23 55.2	24 2.9	24 10.4	24 17.3	24 23.8	24 29.7	24 35.2	36
20	22 11.8	22 22.0	22 31.8	22 41.1	22 50.1	22 58.6	23 6.7	23 14.4	23 21.6	23 28.4	23 34.7	23 40.6	40
16	21 14.3	21 24.6	21 34.7	21 44.2	21 53.4	22 2.2	22 10.5	22 18.5	22 26.0	22 33.2	22 39.8	22 46.1	44
12	20 16.7	20 27.2	20 37.5	20 47.2	20 56.7	21 5.7	21 14.3	21 22.6	21 30.4	21 37.9	21 44.9	21 51.5	48
8	19 19.2	19 29.9	19 40.4	19 50.3	20 0.0	20 9.3	20 18.2	20 26.7	20 34.9	20 42.7	20 50.0	20 57.1	52
4	18 21.7	18 32.6	18 43.3	18 53.4	19 3.4	19 13.0	19 22.1	19 30.9	19 39.4	19 47.5	19 55.2	20 2.6	4 56
19 0	17 24.3	17 35.3	17 46.2	17 56.6	18 6.8	18 16.6	18 26.0	18 35.2	18 43.9	18 52.4	19 0.5	19 8.2	5 0
18 56	16 26.9	16 38.1	16 49.2	16 59.8	17 10.2	17 20.3	17 30.0	17 39.4	17 48.5	17 57.3	18 5.8	18 13.9	4
52	15 29.5	15 41.0	15 52.2	16 3.0	16 13.7	16 24.0	16 34.0	16 43.8	16 53.2	17 2.3	17 11.1	17 19.6	8
48	14 32.2	14 43.8	14 55.3	15 6.3	15 17.2	15 27.8	15 38.1	15 48.1	15 57.8	16 7.4	16 16.4	16 25.3	12
44	13 34.9	13 46.7	13 58.4	14 9.6	14 20.7	14 31.6	14 42.2	14 52.5	15 2.6	15 12.4	15 21.9	15 31.1	16
40	12 37.6	12 49.6	13 1.5	13 13.0	13 24.4	13 35.5	13 46.3	13 57.0	14 7.3	14 17.5	14 27.3	14 37.0	20
36	11 40.4	11 52.6	12 4.7	12 16.4	12 28.1	12 39.5	12 50.5	13 1.5	13 12.1	13 22.6	13 32.8	13 42.9	24
32	10 43.2	10 55.6	11 7.9	11 19.9	11 31.8	11 43.5	11 54.8	12 6.0	12 17.0	12 27.9	12 38.5	12 48.8	28
28	9 46.0	9 58.7	10 11.2	10 23.4	10 35.5	10 47.4	10 59.1	11 10.7	11 22.0	11 33.2	11 44.1	11 54.8	32
24	8 49.0	9 1.7	9 14.5	9 26.9	9 39.3	9 51.5	10 3.5	10 15.4	10 27.0	10 38.5	10 49.8	11 0.9	36
20	7 51.9	8 4.9	8 17.9	8 30.5	8 43.2	8 55.6	9 7.9	9 20.1	9 32.1	9 43.9	9 55.5	10 7.0	40
16	6 54.8	7 8.1	7 21.3	7 34.2	7 47.1	7 59.9	8 12.4	8 24.9	8 37.2	8 49.4	9 1.4	9 13.2	44
12	5 57.9	6 11.3	6 24.7	6 37.9	6 51.1	7 4.1	7 17.0	7 29.8	7 42.4	7 54.9	8 7.3	8 19.5	48
8	5 0.9	5 14.6	5 28.2	5 41.7	5 55.1	6 8.4	6 21.6	6 34.7	6 47.6	7 0.6	7 13.3	7 25.9	52
4	4 4.0	4 17.9	4 31.8	4 45.5	4 59.2	5 12.8	5 26.3	5 39.7	5 53.0	6 6.2	6 19.3	6 32.3	5 56
18 0	3 7.2	3 21.3	3 35.4	3 49.4	4 3.4	4 17.2	4 31.0	4 44.8	4 58.4	5 12.0	5 25.5	5 38.9	6 0

LATITUDE 14°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°	
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	76	0 0	75	0 0	74	0 0	73	0 0	72	0 0	71	0 0	70	0 0	69	0 0
23	56	75	57 9	74	58 0	73	58 0	72	58 1	71	58 4	70	58 6	69	58 6	68	58 5
	52	75	51 6	74	52 2	73	52 3	72	52 8	71	53 5	70	54 0	69	54 1	68	54 3
	48	75	41 3	74	42 5	73	43 3	72	44 2	71	45 4	70	46 3	69	46 9	68	47 2
	44	75	27 0	74	29 2	73	30 9	72	32 4	71	34 0	70	35 5	69	36 6	68	37 6
	40	75	9 0	74	12 2	73	15 0	72	17 4	71	19 8	70	21 8	69	23 6	68	25 3
	36	74	47 5	73	51 9	72	55 6	71	59 3	71	2 8	70	5 4	69	7 9	68	10 1
	32	74	22 7	73	28 5	72	33 5	71	38 0	70	42 7	69	46 4	68	49 5	67	52 6
	28	73	54 9	73	2 2	72	8 4	71	14 3	70	19 8	69	24 6	68	29 0	67	32 7
	24	73	24 3	72	33 0	71	40 8	70	47 8	69	54 6	69	0 4	68	5 7	67	10 7
	20	72	51 2	72	1 5	71	10 7	70	19 0	69	27 0	68	33 9	67	40 4	66	46 3
	16	72	15 8	71	27 6	70	38 1	69	48 0	68	57 2	68	5 4	67	12 8	66	19 7
	12	71	38 4	70	51 8	70	3 7	69	14 7	68	25 4	67	34 8	66	43 4	65	51 3
	8	70	59 1	70	14 0	69	27 2	68	39 8	67	51 6	67	2 2	66	12 1	65	21 1
	4	70	18 0	69	34 3	68	49 2	68	3 0	67	16 1	66	27 9	65	38 9	64	49 2

LATITUDE 14°.															
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.		
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°			
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	°	'
24 0	63 0 0	62 0 0	61 0 0	60 0 0	59 0 0	58 0 0	57 0 0	56 0 0	55 0 0	54 0 0	53 0 0	52 0 0	0 0	0	0
23 56	62 58.8	61 58.8	60 59.0	59 59.0	58 59.1	57 59.2	56 59.1	55 59.2	54 59.1	53 59.3	52 59.2	51 59.3	4	4	4
52	62 55.7	61 55.8	60 56.0	59 56.1	58 56.2	57 56.5	56 56.5	55 56.6	54 56.6	53 56.8	52 57.0	51 57.0	8	8	8
48	62 50.4	61 50.6	60 51.0	59 51.2	58 51.6	57 51.9	56 52.1	55 52.3	54 52.4	53 52.9	52 53.1	51 53.3	12	12	12
44	62 42.8	61 43.2	60 44.0	59 44.4	58 45.0	57 45.5	56 45.9	55 46.4	54 46.9	53 47.3	52 47.7	51 48.0	16	16	16
40	62 33.1	61 34.0	60 35.0	59 35.8	58 36.6	57 37.4	56 38.0	55 38.8	54 39.4	53 40.1	52 40.7	51 41.3	20	20	20
36	62 21.4	61 22.6	60 24.1	59 25.1	58 26.4	57 27.5	56 28.5	55 29.5	54 30.4	53 31.4	52 32.2	51 33.1	24	24	24
32	62 7.5	61 9.4	60 11.2	59 12.8	58 14.3	57 16.0	56 17.2	55 18.6	54 19.8	53 21.1	52 22.4	51 23.4	28	28	28
28	61 51.8	60 54.1	59 56.5	58 58.5	57 60.7	56 63.5	55 66.1	54 68.5	53 70.5	52 72.9	51 75.1	50 77.0	32	32	32
24	61 34.0	60 36.9	59 39.9	58 42.6	57 45.1	56 47.6	55 49.8	54 52.0	53 54.1	52 56.1	51 57.9	50 59.7	36	36	36
20	61 14.5	60 18.0	59 21.7	58 24.8	57 28.0	56 31.0	55 33.7	54 36.4	53 38.9	52 41.3	51 43.6	50 45.9	40	40	40
16	60 53.1	59 57.5	59 1.6	58 5.4	57 9.2	56 12.8	55 16.0	54 19.3	53 22.3	52 25.2	51 27.9	50 30.6	44	44	44
12	60 30.0	59 35.1	58 40.0	57 44.4	56 48.8	55 53.0	54 56.9	53 60.5	52 63.4	51 66.5	50 69.5	49 72.4	48	48	48
8	60 5.2	59 11.0	58 16.7	57 21.9	56 26.9	55 31.8	54 36.1	53 40.6	52 44.5	51 48.6	50 52.4	49 56.1	52	52	52
4	59 38.9	58 45.4	57 51.9	56 57.9	56 3.6	55 8.9	54 14.0	53 19.0	52 23.7	51 28.4	50 32.7	49 36.9	0 56	0	56
23 0	59 11.0	58 18.3	57 25.6	56 32.2	55 38.7	54 44.9	53 50.5	52 56.2	52 1.5	51 6.7	50 11.7	49 16.3	1 0	1	0
22 56	58 41.6	57 49.9	56 57.8	56 5.1	55 12.4	54 19.4	53 25.8	52 32.1	51 38.0	50 43.9	49 49.4	48 54.7	4	4	4
52	58 10.8	57 20.0	56 28.7	55 36.9	54 44.8	53 52.5	52 59.7	52 6.7	51 13.2	50 19.7	49 25.8	48 31.7	8	8	8
48	57 38.7	56 48.5	55 58.4	55 7.3	54 16.0	53 24.4	52 32.3	51 40.1	50 47.3	49 54.3	49 1.1	48 7.7	12	12	12
44	57 5.2	56 16.1	55 26.6	54 36.5	53 46.1	52 55.1	52 3.7	51 12.1	50 20.2	49 27.9	48 35.3	47 42.5	16	16	16
40	56 30.8	55 42.4	54 53.8	54 4.4	53 14.8	52 24.7	51 34.0	50 43.1	49 51.8	49 0.4	48 8.4	47 16.2	20	20	20
36	55 55.0	55 7.6	54 19.8	53 31.3	52 42.4	51 53.1	51 3.2	50 13.0	49 22.4	48 31.6	47 40.5	46 48.9	24	24	24
32	55 18.2	54 31.7	53 44.7	52 57.0	52 8.9	51 20.4	50 31.3	49 42.0	48 51.9	48 1.9	47 11.3	46 20.6	28	28	28
28	54 40.5	53 54.7	53 8.6	52 21.7	51 34.4	50 46.6	49 58.3	49 9.7	48 20.6	47 31.1	46 41.3	45 51.2	32	32	32
24	54 1.6	53 16.7	52 31.5	51 45.4	50 58.9	50 12.0	49 24.4	48 36.5	47 48.1	46 59.5	46 10.3	45 20.8	36	36	36
20	53 21.9	52 37.9	51 53.4	51 8.1	50 22.5	49 36.3	48 49.5	48 2.4	47 14.7	46 26.8	45 38.4	44 49.6	40	40	40
16	52 41.2	51 58.1	51 14.4	50 30.0	49 45.1	48 59.8	48 13.8	47 27.4	46 40.4	45 53.2	45 5.7	44 17.5	44	44	44
12	51 59.9	51 17.4	50 34.7	49 51.0	49 7.0	48 22.3	47 37.1	46 51.5	46 5.3	45 18.8	44 31.8	43 44.5	48	48	48
8	51 17.5	50 36.1	49 54.0	49 11.2	48 27.9	47 44.1	46 59.6	46 14.8	45 29.4	44 43.5	43 57.3	43 10.6	52	52	52
4	50 34.1	49 53.8	49 12.7	48 30.6	47 48.1	47 5.1	46 21.4	45 37.3	44 52.5	44 7.5	43 21.9	42 36.0	1 56	1	56
22 0	49 51.0	49 11.1	48 30.5	47 49.3	47 7.6	46 25.3	45 42.3	44 58.9	44 14.9	43 30.6	42 45.9	42 0.6	2 0	2	0
21 56	49 6.7	48 27.5	47 47.8	47 7.3	46 26.3	45 44.8	45 2.5	44 19.9	43 36.6	42 53.1	42 9.0	41 24.5	4	4	4
52	48 21.8	47 43.3	47 4.4	46 24.6	45 44.4	45 3.5	44 22.0	43 40.1	42 57.7	42 14.8	41 31.4	40 47.6	8	8	8
48	47 36.2	46 58.5	46 20.3	45 41.3	45 1.8	44 21.6	43 40.9	42 59.7	42 17.9	41 35.8	40 53.2	40 10.0	12	12	12
44	46 50.1	46 13.1	45 35.7	44 57.3	44 18.6	43 39.2	42 59.1	42 18.7	41 37.6	40 56.2	40 14.2	39 31.8	16	16	16
40	46 3.5	45 27.3	44 50.4	44 12.8	43 34.7	42 56.1	42 16.8	41 37.0	40 56.7	40 15.9	39 34.6	38 52.9	20	20	20
36	45 16.4	44 40.7	44 4.7	43 27.8	42 50.4	42 12.4	41 33.8	40 54.8	40 15.0	39 35.1	38 54.4	38 13.4	24	24	24
32	44 28.7	43 53.8	43 18.4	42 42.3	42 5.5	41 28.3	40 50.3	40 11.9	39 32.9	38 53.5	38 13.7	37 33.3	28	28	28
28	43 40.7	43 6.4	42 31.7	41 56.1	41 20.1	40 43.6	40 6.3	39 28.5	38 50.2	38 11.6	37 32.3	36 52.7	32	32	32
24	42 52.1	42 18.6	41 44.5	41 9.6	40 34.3	39 58.3	39 21.7	38 44.7	38 7.0	37 29.0	36 50.5	36 11.4	36	36	36
20	42 3.3	41 30.3	40 56.9	40 22.6	39 47.9	39 12.6	38 36.7	38 0.3	37 23.3	36 45.9	36 8.1	35 29.7	40	40	40
16	41 13.9	40 41.6	40 8.8	39 35.2	39 1.1	38 26.4	37 51.1	37 15.4	36 39.1	36 2.4	35 25.2	34 47.5	44	44	44
12	40 24.3	39 52.6	39 20.3	38 47.3	38 13.9	37 39.8	37 5.1	36 30.1	35 54.4	35 18.4	34 41.8	34 4.8	48	48	48
8	39 34.3	39 3.1	38 31.5	37 59.1	37 26.2	36 52.8	36 18.8	35 44.3	35 9.3	34 33.9	33 58.0	33 21.6	52	52	52
4	38 43.9	38 13.4	37 42.3	37 10.5	36 38.2	36 5.4	35 32.0	34 58.2	34 23.7	33 49.0	33 13.7	32 37.9	2 56	2	56
21 0	37 53.2	37 23.2	36 52.8	36 21.5	35 49.8	35 17.6	34 44.8	34 11.6	33 37.8	33 3.6	32 28.9	31 53.8	3 0	3	0

LATITUDE 14°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
15 0	21 0	43 19.4	42 59.0	42 37.6	42 15.6	41 52.8	41 29.0	41 4.5	40 39.2	40 13.3	39 46.6	39 19.3	38 51.2	38 22.5	3 0	9 0	
4	20 56	42 22.7	42 2.7	41 41.7	41 19.9	40 57.6	40 34.2	40 10.1	39 45.3	39 19.8	38 53.6	38 26.8	37 59.2	37 30.9	4	8 56	
8	52	41 26.0	41 6.3	40 45.6	40 24.2	40 2.1	39 39.2	39 15.5	38 51.1	38 26.1	38 0.4	37 34.0	37 6.9	36 39.2	8	52	
12	48	40 29.1	40 9.7	39 49.3	39 28.2	39 6.6	38 44.0	38 20.8	37 56.9	37 32.2	37 6.8	36 41.0	36 14.4	35 47.2	12	48	
16	44	39 32.2	39 13.0	38 52.9	38 32.2	38 10.9	37 48.7	37 25.8	37 2.3	36 38.0	36 13.2	35 47.7	35 21.6	34 54.9	16	44	
20	40	38 35.2	38 16.3	37 56.5	37 36.1	37 15.1	36 53.2	36 30.8	36 7.7	35 43.7	35 19.2	34 54.3	34 28.6	34 2.3	20	40	
24	36	37 38.1	37 19.4	36 59.9	36 39.8	36 19.1	35 57.6	35 35.4	35 12.6	34 49.2	34 25.2	34 0.6	33 35.4	33 9.6	24	36	
28	32	36 41.0	36 22.5	36 3.2	35 43.4	35 23.1	35 1.9	34 40.0	34 17.6	33 54.6	33 30.9	33 6.8	32 42.1	32 16.7	28	32	
32	28	35 43.7	35 25.5	35 6.5	34 47.0	34 26.9	34 6.0	33 44.5	33 22.4	32 59.7	32 36.5	32 12.7	31 48.1	31 23.4	32	28	
36	24	34 46.4	34 28.4	34 9.7	33 50.3	33 30.6	33 10.0	32 48.8	32 27.0	32 4.7	31 41.9	31 18.6	30 54.7	30 30.1	36	24	
40	20	33 49.0	33 31.3	33 12.7	32 53.6	32 34.2	32 13.8	31 53.0	31 31.6	31 9.7	30 47.1	30 24.1	30 0.6	29 36.5	40	20	
44	16	32 51.6	32 34.0	32 15.7	31 56.9	31 37.6	31 17.7	30 57.1	30 36.0	30 14.4	29 52.2	29 29.7	29 6.4	28 42.8	44	16	
48	12	31 54.1	31 36.8	31 18.7	31 0.0	30 41.1	30 21.3	30 1.1	29 40.3	29 19.0	28 57.2	28 34.9	28 12.1	27 48.8	48	12	
52	8	30 56.6	30 39.4	30 21.5	30 3.1	29 44.4	29 24.9	29 5.0	28 44.4	28 23.5	28 2.0	27 40.1	27 17.7	26 54.8	52	8	
15 56	4	29 59.0	29 42.0	29 24.3	29 6.2	28 47.7	28 28.4	28 8.7	27 48.5	27 27.9	27 6.7	26 45.2	26 23.1	26 0.5	3 56	4	
16 0	20 0	29 1.3	28 44.5	28 27.0	28 9.1	27 50.9	27 31.8	27 12.4	26 52.4	26 32.1	26 11.3	25 50.0	25 28.3	25 6.2	4 0	8 0	
4	19 56	28 3.6	27 47.0	27 29.7	27 12.0	26 53.9	26 35.2	26 16.0	25 56.3	25 36.2	25 15.7	24 54.8	24 33.4	24 11.6	4	7 56	
8	52	27 5.9	26 49.4	26 32.3	26 14.7	25 56.9	25 38.4	25 19.5	25 0.0	24 40.3	24 20.1	23 59.5	23 38.4	23 16.9	8	52	
12	48	26 8.2	25 51.8	25 34.8	25 17.5	24 59.8	24 41.5	24 22.9	24 3.7	23 44.2	23 24.3	23 4.0	22 43.2	22 22.1	12	48	
16	44	25 10.4	24 54.1	24 37.3	24 20.1	24 2.7	23 44.6	23 26.2	23 7.3	22 48.1	22 28.4	22 8.4	21 48.0	21 27.2	16	44	
20	40	24 12.5	23 56.5	23 39.7	23 22.8	23 5.5	22 47.6	22 29.4	22 10.8	21 51.8	21 32.5	21 12.7	20 52.6	20 32.2	20	40	
24	36	23 14.6	22 58.7	22 42.2	22 25.3	22 8.3	21 50.6	21 32.6	21 14.2	20 55.5	20 36.3	20 17.0	19 57.2	19 37.0	24	36	
28	32	22 16.8	22 1.0	21 44.5	21 27.9	21 11.0	20 53.5	20 35.7	20 17.5	19 59.0	19 40.2	19 21.1	19 1.5	18 41.7	28	32	
32	28	21 18.9	21 3.1	20 46.9	20 30.3	20 13.6	19 56.3	19 38.7	19 20.7	19 2.5	18 44.0	18 25.1	18 5.8	17 46.3	32	28	
36	24	20 20.9	20 5.3	19 49.1	19 32.8	19 16.2	18 59.1	18 41.6	18 23.9	18 5.9	17 47.6	17 29.0	17 10.0	16 50.8	36	24	
40	20	19 22.9	19 7.4	18 51.4	18 35.1	18 18.7	18 1.8	17 44.6	17 27.1	17 9.3	16 51.1	16 32.8	16 14.1	15 55.2	40	20	
44	16	18 24.9	18 9.5	17 53.6	17 37.5	17 21.2	17 4.5	16 47.5	16 30.1	16 12.5	15 54.6	15 36.6	15 18.2	14 59.5	44	16	
48	12	17 26.9	17 11.5	16 55.8	16 39.8	16 23.7	16 7.1	15 50.3	15 33.1	15 15.7	14 58.1	14 40.3	14 22.1	14 3.8	48	12	
52	8	16 28.8	16 13.6	15 57.9	15 42.1	15 26.1	15 9.6	14 53.0	14 36.0	14 18.9	14 1.5	13 43.9	13 26.0	13 7.8	52	8	
16 56	4	15 30.8	15 15.6	15 0.0	14 44.3	14 28.4	14 12.1	13 55.6	13 38.9	13 22.0	13 4.8	12 47.5	12 29.7	12 11.9	4 56	4	
17 0	19 0	14 32.6	14 17.6	14 2.1	13 46.5	13 30.8	13 14.6	12 58.3	12 41.7	12 24.9	12 8.0	11 50.8	11 33.4	11 15.8	5 0	7 0	
4	18 56	13 34.6	13 19.6	13 4.1	12 48.6	12 33.0	12 17.0	12 0.9	11 44.4	11 27.9	11 11.1	10 54.2	10 37.0	10 19.8	4	6 56	
8	52	12 36.5	12 21.5	12 6.2	11 50.8	11 35.3	11 19.5	11 3.4	10 47.2	10 30.8	10 14.2	9 57.5	9 40.6	9 23.5	8	52	
12	48	11 38.4	11 23.4	11 8.2	10 52.9	10 37.5	10 21.8	10 5.9	9 49.8	9 33.6	9 17.2	9 0.8	8 44.0	8 27.3	12	48	
16	44	10 40.2	10 25.3	10 10.2	9 55.0	9 39.7	9 24.1	9 8.3	8 52.4	8 36.4	8 20.2	8 3.9	7 47.5	7 30.9	16	44	
20	40	9 42.0	9 27.2	9 12.1	8 57.0	8 41.8	8 26.3	8 10.8	7 55.0	7 39.2	7 23.1	7 7.1	6 50.9	6 34.5	20	40	
24	36	8 43.8	8 29.1	8 14.1	7 59.1	7 44.0	7 28.6	7 13.1	6 57.5	6 41.8	6 26.0	6 10.2	5 54.1	5 38.0	24	36	
28	32	7 45.6	7 31.0	7 16.0	7 1.0	6 46.1	6 30.9	6 15.5	6 0.0	5 44.5	5 28.9	5 13.2	4 57.3	4 41.5	28	32	
32	28	6 47.5	6 32.9	6 17.9	6 3.0	5 48.2	5 33.0	5 17.8	5 2.5	4 47.1	4 31.6	4 16.1	4 0.5	3 44.8	32	28	
36	24	5 49.3	5 34.7	5 19.8	5 5.0	4 50.2	4 35.1	4 20.1	4 4.9	3 49.7	3 34.3	3 19.1	3 3.6	2 48.1	36	24	
40	20	4 51.1	4 36.5	4 21.7	4 6.9	3 52.2	3 37.3	3 22.3	3 7.2	2 52.2	2 37.1	2 21.9	2 6.7	1 51.4	40	20	
44	16	3 52.9	3 38.3	3 23.6	3 8.8	2 54.2	2 39.4	2 24.5	2 9.6	1 54.7	1 39.7	1 24.7	1 9.7	0 54.6	44	16	
48	12	2 54.7	2 40.1	2 25.4	2 10.8	1 56.2	1 41.5	1 26.7	1 11.9	0 57.1	0 42.2	0 27.5	0 12.7	0 2.2	48	12	
52	8	1 56.4	1 41.9	1 27.2	1 12.7	0 58.2	0 43.5	0 28.8	0 14.1	0 0.5	0 15.2	0 29.8	0 44.4	0 59.1	52	8	
17 56	4	0 58.2	0 43.7	0 29.1	0 14.6	0 0.1	0 14.4	0 29.0	0 43.7	0 58.1	1 12.7	1 27.1	1 41.6	1 56.0	5 56	4	
18 0	18 0	0 0.0	0 14.6	0 29.1	0 43.6	0 58.0	1 12.5	1 27.0	1 41.4	1 55.8	2 10.2	2 24.5	2 38.8	2 53.0	6 0	6 0	

LATITUDE 14°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.			
		DECLINATION															
Declination														Declination			
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.		
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.		
15 0	21 0	37 53.2	37 23.2	36 52.8	36 21.5	35 49.8	35 17.6	34 44.8	34 11.6	33 37.8	33 3.6	32 28.9	31 53.8	3 0	9 0		
4	20 56	37 2.3	36 32.8	36 2.9	35 32.2	35 1.1	34 29.5	33 57.3	33 24.7	32 51.4	32 17.9	31 43.8	31 9.3	4	8 56		
8	52	36 11.0	35 42.0	35 12.6	34 42.6	34 12.1	33 41.0	33 9.4	32 37.3	32 4.7	31 31.8	30 58.3	30 24.4	8	52		
12	48	35 19.4	34 51.0	34 22.2	33 52.6	33 22.7	32 52.2	32 21.1	31 49.6	31 17.6	30 45.3	30 12.4	29 39.1	12	48		
16	44	34 27.7	33 59.7	33 31.4	33 2.4	32 32.9	32 3.0	31 32.6	31 1.6	30 30.2	29 58.4	29 26.2	28 53.5	16	44		
20	40	33 35.6	33 8.3	32 40.4	32 11.9	31 43.0	31 13.5	30 43.6	30 13.3	29 42.4	29 11.2	28 39.5	28 7.4	20	40		
24	36	32 43.4	32 16.4	31 49.1	31 21.1	30 52.7	30 23.8	29 54.4	29 24.7	28 54.3	28 23.7	27 52.6	27 21.1	24	36		
28	32	31 50.8	31 24.4	30 57.5	30 30.1	30 2.1	29 33.8	29 4.9	28 35.6	28 5.9	27 35.9	27 5.3	26 34.4	28	32		
32	28	30 58.1	30 32.1	30 5.8	29 38.7	29 11.4	28 43.5	28 15.1	27 46.4	27 17.2	26 47.7	26 17.8	25 47.4	32	28		
36	24	30 5.1	29 39.7	29 13.7	28 47.2	28 20.3	27 53.0	27 25.1	26 56.9	26 28.2	25 59.2	25 29.9	25 0.1	36	24		
40	20	29 12.0	28 46.9	28 21.5	27 55.4	27 29.0	27 2.2	26 34.8	26 7.1	25 39.0	25 10.5	24 41.6	24 12.4	40	20		
44	16	28 18.7	27 54.0	27 29.0	27 3.4	26 37.5	26 11.1	25 44.3	25 17.1	24 49.5	24 21.5	23 53.2	23 24.5	44	16		
48	12	27 25.2	27 0.9	26 36.4	26 11.2	25 45.7	25 19.8	24 53.5	24 26.9	23 59.7	23 32.3	23 4.4	22 36.3	48	12		
52	8	26 31.5	26 7.7	25 43.5	25 18.8	24 53.7	24 28.4	24 2.5	23 36.3	23 9.7	22 42.8	22 15.5	21 47.9	52	8		
15 56	4	25 37.7	25 14.2	24 50.5	24 26.2	24 1.7	23 36.7	23 11.3	22 45.6	22 19.4	21 53.0	21 26.3	20 59.2	3 56	4		
16 0	20 0	24 43.6	24 20.6	23 57.3	23 33.5	23 9.3	22 44.8	22 19.8	21 54.6	21 28.9	21 3.1	20 36.8	20 10.3	4 0	8 0		
4	19 56	23 49.5	23 26.8	23 3.9	22 40.5	22 16.8	21 52.7	21 28.2	21 3.4	20 38.3	20 12.9	19 47.2	19 21.0	4	7 56		
8	52	22 55.2	22 32.9	22 10.4	21 47.3	21 24.0	21 0.4	20 36.3	20 12.1	19 47.4	19 22.5	18 57.2	18 31.7	8	52		
12	48	22 0.7	21 38.9	21 16.7	20 54.0	20 31.1	20 7.9	19 44.3	19 20.5	18 56.3	18 31.8	18 7.1	17 42.0	12	48		
16	44	21 6.2	20 44.6	20 22.9	20 0.6	19 38.1	19 15.3	18 52.1	18 28.8	18 4.9	17 41.0	17 16.7	16 52.2	16	44		
20	40	20 11.4	19 50.3	19 28.8	19 7.0	18 44.9	18 22.5	17 59.8	17 36.8	17 13.5	16 50.0	16 26.2	16 2.0	20	40		
24	36	19 16.6	18 55.7	18 34.7	18 13.2	17 51.6	17 29.6	17 7.2	16 44.7	16 21.8	15 58.8	15 35.4	15 11.9	24	36		
28	32	18 21.6	18 1.1	17 40.5	17 19.3	16 58.1	16 36.5	16 14.6	15 52.4	15 30.0	15 7.4	14 44.5	14 21.4	28	32		
32	28	17 26.6	17 6.4	16 46.1	16 25.3	16 4.4	15 43.2	15 21.7	15 0.0	14 38.0	14 15.9	13 53.4	13 30.8	32	28		
36	24	16 31.4	16 11.5	15 51.6	15 31.1	15 10.6	14 49.8	14 28.6	14 7.4	13 45.8	13 24.1	13 2.1	12 40.0	36	24		
40	20	15 36.1	15 16.6	14 56.9	14 36.9	14 16.7	13 56.2	13 35.5	13 14.6	12 53.5	12 32.3	12 10.7	11 49.0	40	20		
44	16	14 40.7	14 21.5	14 2.2	13 42.5	13 22.6	13 2.6	12 42.2	12 21.8	12 1.0	11 40.2	11 19.1	10 57.9	44	16		
48	12	13 45.2	13 26.3	13 7.3	12 48.0	12 28.5	12 8.8	11 48.9	11 28.7	11 8.4	10 48.0	10 27.4	10 6.5	48	12		
52	8	12 49.6	12 31.0	12 12.3	11 53.3	11 34.2	11 14.9	10 55.3	10 35.6	10 15.7	9 55.7	9 35.4	9 15.1	52	8		
16 56	4	11 53.9	11 35.6	11 17.2	10 58.6	10 39.8	10 20.9	10 1.6	9 42.3	9 22.8	9 3.2	8 43.4	8 23.5	4 56	4		
17 0	19 0	10 58.1	10 40.1	10 22.1	10 3.7	9 45.3	9 26.7	9 7.8	8 48.9	8 29.7	8 10.6	7 51.2	7 31.7	5 0	7 0		
4	18 56	10 2.3	9 44.6	9 26.8	9 8.8	8 50.7	8 32.4	8 13.9	7 55.4	7 36.6	7 17.9	6 58.9	6 39.9	4	6 56		
8	52	9 6.4	8 49.0	8 31.5	8 13.8	7 55.9	7 38.0	7 19.9	7 1.7	6 43.4	6 25.0	6 6.5	5 47.8	8	52		
12	48	8 10.4	7 53.2	7 36.0	7 18.6	7 1.1	6 43.5	6 25.8	6 8.0	5 50.0	5 32.1	5 13.9	4 55.7	12	48		
16	44	7 14.3	6 57.4	6 40.5	6 23.3	6 6.2	5 48.9	5 31.5	5 14.1	4 56.5	4 38.9	4 21.2	4 3.4	16	44		
20	40	6 18.1	6 1.5	5 44.9	5 28.0	5 11.2	4 54.2	4 37.2	4 20.1	4 2.9	3 45.7	3 28.4	3 11.0	20	40		
24	36	5 21.9	5 5.5	4 49.2	4 32.6	4 16.1	3 59.5	3 42.8	3 26.0	3 9.1	2 52.3	2 35.4	2 18.5	24	36		
28	32	4 25.6	4 9.4	3 53.4	3 37.1	3 20.9	3 4.7	2 48.2	2 31.8	2 15.3	1 58.9	1 42.4	1 25.9	28	32		
32	28	3 29.1	3 13.3	2 57.5	2 41.6	2 25.7	2 9.7	1 53.6	1 37.5	1 21.4	1 5.4	0 49.3	0 33.1	32	28		
36	24	2 32.8	2 17.1	2 1.6	1 45.9	1 30.3	1 14.7	0 58.9	0 43.2	0 27.4	0 11.8	0 4.0	0 19.7	36	24		
40	20	1 36.2	1 20.9	1 5.6	0 50.2	0 34.9	0 19.5	0 4.1	0 11.2	0 26.6	0 42.0	0 57.3	1 12.7	40	20		
44	16	0 39.7	0 24.6	0 9.6	0 5.6	0 20.7	0 35.7	0 50.8	1 5.8	1 20.9	1 35.8	1 50.8	2 5.7	44	16		
48	12	0 16.9	0 31.8	0 46.6	1 1.5	1 16.2	1 30.9	1 45.8	2 0.4	2 15.1	2 29.7	2 44.3	2 58.8	48	12		
52	8	1 13.7	1 28.3	1 42.8	1 57.4	2 11.8	2 26.3	2 40.8	2 55.1	3 9.5	3 23.7	3 37.9	3 52.1	52	8		
17 56	4	2 10.3	2 24.8	2 39.0	2 53.4	3 7.6	3 21.7	3 35.9	3 49.9	4 3.9	4 17.8	4 31.6	4 45.4	5 56	4		
18 0	18 0	3 7.2	3 21.3	3 35.4	3 49.4	4 3.4	4 17.2	4 31.1	4 44.8	4 58.4	5 12.0	5 25.4	5 38.9	6 0	6 0		

LATITUDE 15°.																
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.													Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
24 0	75 0 0	76 0 0	77 0 0	78 0 0	79 0 0	80 0 0	81 0 0	82 0 0	83 0 0	84 0 0	85 0 0	86 0 0	87 0 0	0 0	0 0	0 0
23 56	74 58.1	75 57.9	76 57.7	77 57.5	78 57.2	79 57.1	80 56.8	81 56.4	82 55.9	83 55.3	84 54.3	85 53.0	86 50.8	4	0 4	0 4
52	74 52.2	75 51.7	76 51.0	77 50.3	78 49.5	79 48.5	80 47.3	81 45.8	82 43.9	83 41.3	84 38.0	85 33.0	86 25.5	8	0 8	0 8
48	74 42.6	75 41.5	76 39.9	77 38.5	78 36.7	79 34.4	80 31.7	81 28.6	82 24.5	83 19.3	84 12.3	85 2.7	86 48.9	12	0 12	0 12
44	74 29.3	75 27.2	76 24.9	77 22.3	78 19.0	79 15.2	80 10.7	81 5.3	81 58.6	82 50.2	83 39.4	84 24.9	85 5.3	16	0 16	0 16
40	74 12.5	75 9.4	76 5.8	77 1.9	77 56.9	78 51.3	79 44.8	80 36.8	81 27.3	82 15.5	83 0.7	83 41.8	84 17.2	20	0 20	0 20
36	73 52.2	74 47.9	75 43.0	76 37.4	77 30.9	78 23.3	79 14.4	80 3.9	80 51.5	81 36.4	82 17.9	82 55.0	83 26.4	24	0 24	0 24
32	73 28.9	74 23.3	75 16.7	76 9.6	77 1.1	77 51.8	78 40.5	79 27.0	80 12.0	80 53.7	81 31.9	82 5.6	82 33.7	28	0 28	0 28
28	73 2.6	73 55.6	74 47.5	75 38.4	76 28.2	77 16.8	78 3.2	78 47.7	79 29.7	80 8.6	80 48.6	81 14.3	81 39.8	32	0 32	0 32
24	72 33.6	73 25.2	74 15.4	75 4.7	75 52.4	76 38.9	77 23.1	78 5.0	78 44.5	79 21.0	79 53.4	80 21.7	80 44.9	36	0 36	0 36
20	72 2.1	72 52.1	73 40.8	74 28.4	75 14.1	75 58.7	76 40.7	77 20.4	77 57.7	78 31.8	79 2.1	79 28.2	79 49.6	40	0 40	0 40
16	71 28.5	72 16.9	73 3.9	73 49.7	74 33.9	75 16.3	75 56.2	76 34.1	77 9.1	77 41.1	78 9.2	78 33.7	78 53.6	44	0 44	0 44
12	70 52.6	71 39.5	72 24.9	73 9.1	73 51.4	74 32.2	75 9.9	75 46.0	76 19.3	76 49.4	77 15.9	77 38.7	77 57.2	48	0 48	0 48
8	70 15.0	71 0.2	71 44.2	72 26.7	73 7.4	73 46.5	74 22.8	74 56.9	75 28.4	75 56.8	76 21.6	76 43.2	77 0.6	52	0 52	0 52
4	69 35.5	70 19.4	71 1.8	71 42.8	72 21.9	72 59.3	73 34.1	74 6.5	74 36.5	75 3.2	75 27.1	76 47.2	76 3.9	0 56	0 56	0 56
23 0	68 54.6	69 37.0	70 18.1	70 57.6	71 35.1	72 11.0	72 44.2	73 15.4	73 43.8	74 9.6	74 32.0	75 51.2	76 6.9	1 0	1 0	1 0
22 56	68 12.2	68 53.4	69 32.9	70 11.1	70 47.2	71 21.7	71 53.6	72 23.2	72 50.5	73 14.9	73 36.3	74 54.6	75 9.6	4	1 4	1 4
52	67 28.5	68 8.5	68 46.7	69 23.4	69 58.3	70 31.4	71 2.0	71 30.5	71 56.5	72 20.0	72 40.5	73 57.9	74 12.2	8	1 8	1 8
48	66 43.8	67 22.4	67 59.4	68 34.9	69 8.5	69 40.4	70 9.9	70 37.1	71 2.2	71 24.7	71 44.2	72 1.2	72 14.9	12	1 12	1 12
44	65 58.0	66 35.4	67 11.2	67 45.5	68 18.0	68 48.7	69 17.1	69 43.4	70 7.4	70 29.0	70 47.8	71 4.1	71 17.4	16	1 16	1 16
40	65 11.2	65 47.4	66 22.3	66 55.4	67 26.7	67 56.4	68 23.7	68 49.2	69 12.2	69 33.0	69 51.3	70 6.9	70 19.9	20	1 20	1 20
36	64 23.5	64 58.7	65 32.4	66 4.6	66 34.8	67 3.6	67 30.1	67 54.6	68 16.9	68 36.9	68 54.5	69 9.7	69 22.2	24	1 24	1 24
32	63 35.2	64 9.3	64 42.0	65 13.1	65 42.5	66 10.3	66 35.8	66 59.5	67 21.0	67 40.6	67 57.6	68 12.2	68 24.5	28	1 28	1 28
28	62 46.0	63 19.2	63 50.6	64 21.2	64 49.7	65 16.5	65 41.3	66 4.2	66 25.2	66 43.9	67 0.5	67 14.8	67 26.8	32	1 32	1 32
24	61 56.1	62 28.4	62 59.4	63 28.6	63 56.3	64 22.5	64 46.5	65 8.7	65 29.0	65 47.3	66 3.3	66 17.4	66 29.1	36	1 36	1 36
20	61 5.7	61 37.2	62 7.3	62 35.7	63 2.5	63 28.0	63 51.3	64 13.0	64 32.6	64 50.4	65 6.1	65 19.7	65 31.3	40	1 40	1 40
16	60 14.8	60 45.5	61 14.6	61 42.3	62 8.5	62 33.1	62 55.9	63 16.8	63 36.1	63 53.5	64 8.8	64 22.2	64 33.4	44	1 44	1 44
12	59 23.4	59 53.2	60 21.6	60 48.7	61 14.1	61 38.2	62 0.2	62 20.7	62 39.5	62 56.5	63 11.4	63 24.5	63 35.6	48	1 48	1 48
8	58 31.5	59 0.6	59 28.3	59 54.7	60 19.5	60 42.8	61 4.4	61 24.4	61 42.7	61 59.3	62 13.9	62 26.8	62 37.6	52	1 52	1 52
4	57 39.1	58 7.5	58 34.6	59 0.4	59 24.4	59 47.3	60 8.4	60 27.9	60 45.8	61 2.0	61 16.4	61 29.0	61 39.8	1 56	1 56	1 56
22 0	56 46.5	57 14.2	57 40.6	58 5.7	58 29.3	58 51.6	59 12.2	59 31.3	59 48.8	60 4.6	60 18.8	60 31.2	60 41.9	2 0	2 0	2 0
21 56	55 53.4	56 20.5	56 46.2	57 10.7	57 33.9	57 55.7	58 15.8	58 34.5	58 51.7	59 7.2	59 21.1	59 33.4	59 43.9	4	2 4	2 4
52	55 0.0	55 26.5	55 51.7	56 15.7	56 38.3	56 59.7	57 19.3	57 37.6	57 54.5	58 9.8	58 23.4	58 35.5	58 46.0	8	2 8	2 8
48	54 6.3	54 32.2	54 56.9	55 20.4	55 42.5	56 3.3	56 22.6	56 40.6	56 57.2	57 12.2	57 25.7	57 37.7	57 48.0	12	2 12	2 12
44	53 12.3	53 37.7	54 1.9	54 24.9	54 46.5	55 7.0	55 25.9	55 43.6	55 59.8	56 14.6	56 27.9	56 39.8	56 50.1	16	2 16	2 16
40	52 18.1	52 42.9	53 6.6	53 29.2	53 50.4	54 10.5	54 29.1	54 46.4	55 2.4	55 17.0	55 30.1	55 41.9	55 52.2	20	2 20	2 20
36	51 23.8	51 48.0	52 11.1	52 33.3	52 54.1	53 13.8	53 32.1	53 49.1	54 4.9	54 19.4	54 32.4	54 44.0	54 54.3	24	2 24	2 24
32	50 29.0	50 52.8	51 15.6	51 37.2	51 57.6	52 17.1	52 35.1	52 51.8	53 7.4	53 21.6	53 34.5	53 46.1	53 56.2	28	2 28	2 28
28	49 34.0	49 57.5	50 19.8	50 41.1	51 1.1	51 20.2	51 37.9	51 54.5	52 9.8	52 23.9	52 36.6	52 48.2	52 58.3	32	2 32	2 32
24	48 38.9	49 1.9	49 23.9	49 44.8	50 4.5	50 23.2	50 40.7	50 57.0	51 12.2	51 26.1	51 38.8	51 50.2	52 0.4	36	2 36	2 36
20	47 43.6	48 6.3	48 27.9	48 48.4	49 7.8	49 26.3	49 43.4	49 59.5	50 14.6	50 28.3	50 40.9	50 52.2	51 2.4	40	2 40	2 40
16	46 48.1	47 10.3	47 31.6	47 51.8	48 11.0	48 29.1	48 46.1	48 61.9	49 2.0	49 16.8	49 30.5	49 42.9	49 54.3	44	2 44	2 44
12	45 52.5	46 14.4	46 35.2	46 55.2	47 14.0	47 32.0	47 48.7	48 4.4	48 19.0	48 32.6	48 45.1	48 56.3	49 6.5	48	2 48	2 48
8	44 56.7	45 18.2	45 38.8	45 58.4	46 17.0	46 34.7	46 51.3	47 6.8	47 21.3	47 34.7	47 47.2	47 58.4	48 8.6	52	2 52	2 52
4	44 0.9	44 22.0	44 42.2	45 1.6	45 19.9	45 37.4	45 53.7	46 9.1	46 23.5	46 36.9	46 49.2	47 0.5	47 10.6	2 56	2 56	2 56
21 0	43 4.8	43 25.6	43 45.6	44 4.6	44 22.7	44 40.0	44 56.2	45 11.4	45 25.7	45 39.0	45 51.3	46 2.5	46 12.6	3 0	3 0	3 0

LATITUDE 15°.																	
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.			
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°				
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	88	0	89	0	90	0	89	0	88	0	87	0	86	0	0	0
23	56	87	46	88	36	89	1	88	36	87	46	86	51	85	53	4	4
	52	87	12	87	49	88	4	87	49	87	13	86	26	85	34	8	8
	48	86	28	86	55	87	6	86	56	86	29	85	50	84	4	12	12
	44	85	38	86	0	86	8	86	1	85	39	85	7	84	27	16	16
	40	84	45	85	3	85	10	85	4	84	47	84	20	83	46	20	20
	36	83	50	84	6	84	12	84	7	83	53	83	30	83	0	24	24
	32	82	55	83	9	83	14	83	10	82	58	82	38	82	12	28	28
	28	81	59	82	11	82	16	82	13	82	3	81	45	81	22	32	32
	24	81	2	81	13	81	18	81	16	81	7	80	51	80	30	36	36
	20	80	5	80	16	80	20	80	18	79	57	79	38	79	14	40	40
	16	79	8	79	18	79	22	79	21	79	14	79	1	78	45	44	44
	12	78	11	78	20	78	24	78	23	78	17	78	6	77	51	48	48
	8	77	13	77	22	77	26	77	26	77	10	76	56	76	38	52	52
	4	76	16	76	24	76	28	76	28	76	15	76	1	75	44	0	56
23	0	75	18	75	27	75	30	75	31	75	26	75	18	74	51	1	0
22	56	74	20	74	29	74	32	74	33	74	29	74	22	74	11	4	4
	52	73	23	73	31	73	35	73	35	73	32	73	25	73	16	8	8
	48	72	25	72	33	72	36	72	38	72	35	72	29	72	20	12	12
	44	71	27	71	35	71	39	71	40	71	38	71	32	71	24	16	16
	40	70	29	70	37	70	41	70	42	70	40	70	36	70	28	20	20
	36	69	31	69	39	69	43	69	45	69	43	69	39	69	32	24	24
	32	68	34	68	41	68	45	68	47	68	46	68	42	68	36	28	28
	28	67	36	67	43	67	47	67	49	67	48	67	45	67	39	32	32
	24	66	38	66	45	66	49	66	52	66	51	66	48	66	43	36	36
	20	65	40	65	47	65	51	65	54	65	54	65	51	65	46	40	40
	16	64	42	64	49	64	54	64	56	64	56	64	54	64	50	44	44
	12	63	44	63	51	63	56	63	58	63	59	63	57	63	53	48	48
	8	62	46	62	53	62	58	63	1	63	2	63	0	62	57	52	52
	4	61	48	61	55	62	0	62	3	62	4	62	3	62	0	1	56
22	0	60	50	60	57	61	2	61	5	61	7	61	6	61	4	2	0
21	56	59	52	59	59	60	4	60	8	60	9	60	9	60	3	4	4
	52	58	54	59	1	59	7	59	10	59	12	59	12	59	7	8	8
	48	57	56	58	4	58	9	58	13	58	15	58	15	58	11	12	12
	44	56	58	57	6	57	11	57	15	57	17	57	18	57	14	16	16
	40	56	0	56	8	56	13	56	17	56	20	56	21	56	18	20	20
	36	55	2	55	10	55	15	55	20	55	23	55	24	55	24	24	24
	32	54	4	54	12	54	18	54	22	54	25	54	27	54	27	28	28
	28	53	6	53	14	53	20	53	25	53	28	53	30	53	30	32	32
	24	52	9	52	16	52	22	52	27	52	31	52	33	52	33	36	36
	20	51	11	51	18	51	25	51	30	51	33	51	36	51	37	40	40
	16	50	13	50	21	50	27	50	32	50	36	50	39	50	40	44	44
	12	49	15	49	23	49	29	49	35	49	39	49	42	49	43	48	48
	8	48	17	48	25	48	32	48	37	48	41	48	44	48	46	52	52
	4	47	19	47	27	47	34	47	40	47	44	47	48	47	50	2	56
21	0	46	21	46	29	46	36	46	42	46	47	46	51	46	53	3	0

LATITUDE 15°.																	
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°	
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	43	4.8	43	25.6	43	45.6	44	4.6	44	22.7	44	40.0	44	56.2	45	11.4
20	56	42	8.6	42	29.2	42	48.8	43	7.6	43	25.5	43	42.6	43	58.6	44	13.7
	52	41	12.4	41	32.6	41	52.0	42	10.5	42	28.2	42	45.1	43	0.9	43	15.9
	48	40	15.9	40	35.9	40	55.0	41	13.4	41	30.8	41	47.6	42	3.3	42	18.2
	44	39	19.4	39	39.2	39	58.0	40	16.1	40	33.4	40	50.0	41	5.6	41	20.3
40	36	37	26.2	37	45.4	38	3.8	38	21.6	38	38.5	38	54.7	39	10.1	39	24.6
	32	36	29.4	36	48.3	37	6.6	37	24.2	37	41.0	37	57.1	38	12.3	38	26.8
	28	35	32.6	35	51.3	36	9.3	36	26.7	36	43.4	36	59.4	37	14.5	37	28.9
	24	34	35.6	34	54.2	35	12.0	35	29.2	35	45.7	36	1.6	36	16.7	36	31.0
36	20	33	38.6	33	57.0	34	14.7	34	31.7	34	48.1	35	3.8	35	18.7	35	33.1
	16	32	41.6	32	59.8	33	17.3	33	34.2	33	50.4	34	6.0	34	20.9	34	35.2
	12	31	44.5	32	2.5	32	19.8	32	36.6	32	52.6	33	8.2	33	23.0	33	37.2
	8	30	47.3	31	5.1	31	22.3	31	38.9	31	54.9	32	10.4	32	25.1	32	39.3
32	4	29	50.1	30	7.7	30	24.7	30	41.3	30	57.2	31	12.5	31	27.2	31	41.4
	0	28	52.7	29	10.2	29	27.1	29	43.5	29	59.3	30	14.7	30	29.3	30	43.4
	56	27	55.4	28	12.7	28	29.5	28	45.8	29	1.6	29	16.8	29	31.4	29	45.5
	52	26	58.0	27	15.2	27	31.8	27	48.1	28	3.7	28	18.9	28	33.4	28	47.5
28	48	26	0.6	26	17.6	26	34.2	26	50.3	27	5.9	27	21.0	27	35.5	27	49.5
	44	25	3.1	25	20.0	25	36.5	25	52.5	26	8.0	26	23.1	26	37.6	26	51.6
	40	24	5.6	24	22.4	24	38.7	24	54.7	25	10.1	25	25.1	25	39.6	25	53.6
	36	23	8.0	23	24.7	23	40.9	23	56.8	24	12.2	24	27.2	24	41.6	24	55.7
24	32	22	10.4	22	27.0	22	43.2	22	58.9	23	14.3	23	29.3	23	43.7	23	57.7
	28	21	12.8	21	29.3	21	45.3	22	1.1	22	16.3	22	31.3	22	45.7	22	59.8
	24	20	15.2	20	31.6	20	47.5	21	3.2	21	18.4	21	33.3	21	47.8	22	1.9
	20	19	17.4	19	33.8	19	49.7	20	5.3	20	20.5	20	35.4	20	49.8	21	3.9
20	16	18	19.7	18	35.9	18	51.8	19	7.3	19	22.6	19	37.5	19	51.9	20	6.0
	12	17	22.0	17	38.1	17	53.9	18	9.5	18	24.6	18	39.5	18	54.0	19	8.1
	8	16	24.2	16	40.3	16	56.0	17	11.5	17	26.7	17	41.5	17	56.0	18	10.2
	4	15	26.4	15	42.4	15	58.1	16	13.6	16	28.7	16	43.6	16	58.1	17	12.3
19	0	14	28.7	14	44.6	15	0.2	15	15.6	15	30.7	15	45.6	16	0.2	16	14.5
	56	13	30.9	13	46.7	14	2.3	14	17.7	14	32.7	14	47.7	15	2.3	15	16.6
	52	12	33.0	12	48.8	13	4.3	13	19.7	13	34.8	13	49.7	14	4.4	14	18.7
	48	11	35.1	11	50.9	12	6.4	12	21.8	12	36.8	12	51.8	13	6.4	13	20.9
18	44	10	37.2	10	53.0	11	8.5	11	23.8	11	38.9	11	53.9	12	8.6	12	23.0
	40	9	39.4	9	55.0	10	10.5	10	25.9	10	41.0	10	56.0	11	10.6	11	25.2
	36	8	41.5	8	57.1	9	12.6	9	27.9	9	43.1	9	58.1	10	12.8	10	27.4
	32	7	43.6	7	59.2	8	14.6	8	30.0	8	45.1	9	0.2	9	15.1	9	29.7
18	28	6	45.6	7	1.2	7	16.7	7	32.0	7	47.1	8	2.3	8	17.2	8	31.9
	24	5	47.7	6	3.3	6	18.7	6	34.0	6	49.2	7	4.5	7	19.4	7	34.3
	20	4	49.8	5	5.3	5	20.7	5	36.1	5	51.4	6	6.6	6	21.6	6	36.6
	16	3	51.8	4	7.4	4	22.8	4	38.2	4	53.4	5	8.7	5	23.8	5	38.9
18	12	2	53.9	3	9.4	3	24.9	3	40.3	3	55.6	4	10.9	4	26.1	4	41.2
	8	1	55.9	2	11.4	2	26.9	2	42.4	2	57.7	3	13.2	3	28.3	3	43.6
	4	0	58.0	1	13.5	1	28.9	1	44.5	1	59.9	2	15.3	2	30.7	2	46.0
	0	0	0.0	0	15.5	0	31.0	0	46.6	1	2.1	1	17.6	1	33.0	1	48.4

LATITUDE 15°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h.	m.													h.	m.
21	0	46 21.7	46 29.9	46 36.7	46 42.6	46 47.4	46 51.0	46 53.5	46 54.8	46 55.2	46 54.3	46 52.4	46 49.3	3	0
20	56	45 23.9	45 32.2	45 39.1	45 45.3	45 50.1	45 53.9	45 56.8	45 58.5	45 59.2	45 58.7	45 57.2	45 54.6		4
	52	44 26.0	44 34.3	44 41.5	44 47.8	44 52.9	44 57.0	45 0.1	45 2.2	45 3.2	45 3.1	45 2.0	44 59.9		8
	48	43 28.2	43 36.7	43 43.9	43 50.4	43 55.7	44 0.1	44 3.5	44 5.7	44 7.2	44 7.5	44 6.8	44 5.1		12
	44	42 30.4	42 39.0	42 46.3	42 53.0	42 58.6	43 3.1	43 6.8	43 9.4	43 11.2	43 11.9	43 11.6	43 10.4		16
	40	41 32.6	41 41.3	41 48.8	41 55.6	42 1.3	42 6.2	42 10.1	42 13.1	42 15.2	42 16.2	42 16.4	42 15.5		20
	36	40 34.8	40 43.6	40 51.3	40 58.3	41 4.2	41 9.3	41 13.5	41 16.8	41 19.2	41 20.6	41 21.1	41 20.7		24
	32	39 37.1	39 45.9	39 53.8	40 1.0	40 7.1	40 12.4	40 16.9	40 20.4	40 23.2	40 24.9	40 25.9	40 25.9		28
	28	38 39.3	38 48.2	38 56.3	39 3.7	39 10.0	39 15.6	39 20.3	39 24.1	39 27.2	39 29.3	39 30.7	39 31.1		32
	24	37 41.5	37 50.7	37 58.9	38 6.3	38 13.0	38 18.7	38 23.7	38 27.8	38 31.3	38 33.8	38 35.5	38 36.3		36
	20	36 43.8	36 53.1	37 1.4	37 9.1	37 15.8	37 21.9	37 27.2	37 31.6	37 35.3	37 38.1	37 40.3	37 41.4		40
	16	35 46.1	35 55.4	36 3.9	36 11.8	36 18.8	36 25.1	36 30.7	36 35.4	36 39.4	36 42.6	36 45.0	36 46.7		44
	12	34 48.4	34 57.9	35 6.5	35 14.6	35 21.8	35 28.3	35 34.1	35 39.2	35 43.6	35 47.0	35 49.8	35 51.8		48
	8	33 50.8	34 0.4	34 9.2	34 17.4	34 24.8	34 31.6	34 37.7	34 43.0	34 47.6	34 51.5	34 54.6	34 57.0		52
	4	32 53.0	33 2.9	33 11.8	33 20.3	33 27.9	33 34.9	33 41.2	33 46.8	33 51.7	33 56.0	33 59.5	34 2.3	3	56
20	0	31 55.4	32 5.4	32 14.5	32 23.1	32 31.0	32 38.2	32 44.7	32 50.6	32 55.9	33 0.4	33 4.4	33 7.6	4	0
19	56	30 57.8	31 7.9	31 17.2	31 26.0	31 34.0	31 41.5	31 48.2	31 54.5	32 0.1	32 5.0	32 9.2	32 12.9		4
	52	30 0.2	30 10.5	30 19.9	30 28.9	30 37.2	30 44.8	30 52.0	30 57.6	31 4.3	31 9.5	31 14.2	31 18.2		8
	48	29 2.7	29 13.1	29 22.7	29 31.8	29 40.3	29 48.2	29 55.6	30 2.3	30 8.5	30 14.1	30 19.0	30 23.4		12
	44	28 5.3	28 15.7	28 25.4	28 34.8	28 43.5	28 51.6	28 59.3	29 6.3	29 12.9	29 18.7	29 24.0	29 28.7		16
	40	27 7.6	27 18.2	27 28.2	27 37.8	27 46.7	27 55.1	28 3.0	28 10.3	28 17.1	28 23.3	28 28.9	28 34.1		20
	36	26 10.1	26 20.9	26 31.0	26 40.8	26 49.9	26 58.6	27 6.7	27 14.3	27 21.4	27 27.9	27 34.0	27 39.4		24
	32	25 12.6	25 23.6	25 33.9	25 43.9	25 53.2	26 2.1	26 10.5	26 18.3	26 25.8	26 32.7	26 39.0	26 44.9		28
	28	24 15.2	24 26.3	24 36.8	24 46.9	24 56.5	25 5.6	25 14.3	25 22.5	25 30.2	25 37.4	25 44.1	25 50.3		32
	24	23 17.8	23 29.1	23 39.7	23 50.1	23 59.9	24 9.2	24 18.1	24 26.6	24 34.7	24 42.1	24 49.2	24 55.8		36
	20	22 20.4	22 31.8	22 42.7	22 53.2	23 3.2	23 12.8	23 22.0	23 30.8	23 39.1	23 47.0	23 54.4	24 1.3		40
	16	21 23.1	21 34.7	21 45.7	21 56.4	22 6.7	22 16.5	22 26.0	22 34.9	22 43.7	22 51.8	22 59.6	23 6.8		44
	12	20 25.8	20 37.5	20 48.7	20 59.6	21 10.1	21 20.2	21 29.9	21 39.2	21 48.2	21 56.6	22 4.7	22 12.4		48
	8	19 28.5	19 40.4	19 51.7	20 2.9	20 13.6	20 24.0	20 34.0	20 43.6	20 52.8	21 1.5	21 10.0	21 18.0		52
	4	18 31.1	18 43.3	18 54.9	19 6.2	19 17.1	19 27.7	19 38.0	19 47.9	19 57.4	20 6.6	20 15.3	20 23.7	4	56
19	0	17 33.9	17 46.2	17 58.0	18 9.6	18 20.7	18 31.6	18 42.1	18 52.2	19 2.2	19 11.6	19 20.7	19 29.4	5	0
18	56	16 36.8	16 49.2	17 1.2	17 13.0	17 24.4	17 35.4	17 46.2	17 56.7	18 6.9	18 16.6	18 26.1	18 35.2		4
	52	15 39.6	15 52.2	16 4.4	16 16.4	16 28.0	16 39.4	16 50.4	17 1.1	17 11.7	17 21.8	17 31.6	17 41.1		8
	48	14 42.5	14 55.3	15 7.7	15 19.9	15 31.7	15 43.3	15 54.7	16 5.7	16 16.5	16 26.9	16 37.1	16 46.9		12
	44	13 45.4	13 58.4	14 10.9	14 23.4	14 35.5	14 47.3	14 59.0	15 10.3	15 21.4	15 32.1	15 42.6	15 52.9		16
	40	12 48.4	13 1.5	13 14.3	13 26.9	13 39.3	13 51.4	14 3.3	14 14.9	14 26.4	14 37.4	14 48.3	14 58.9		20
	36	11 51.3	12 4.7	12 17.7	12 30.6	12 43.1	12 55.5	13 7.7	13 19.6	13 31.3	13 42.7	13 54.0	14 4.9		24
	32	10 54.3	11 7.9	11 21.1	11 34.3	11 47.1	11 59.7	12 12.2	12 24.3	12 36.4	12 48.1	12 59.7	13 11.0		28
	28	9 57.4	10 11.2	10 24.6	10 38.0	10 51.0	11 3.9	11 16.6	11 29.1	11 41.6	11 53.6	12 5.6	12 17.3		32
	24	9 0.6	9 14.5	9 28.1	9 41.7	9 55.1	10 8.2	10 21.2	10 34.0	10 46.7	10 59.2	11 11.4	11 23.5		36
	20	8 3.7	8 17.9	8 31.7	8 45.6	8 59.1	9 12.5	9 25.9	9 39.0	9 52.0	10 4.7	10 17.4	10 29.8		40
	16	7 6.9	7 21.3	7 35.4	7 49.4	8 3.2	8 16.9	8 30.5	8 44.0	8 57.3	9 10.4	9 23.4	9 36.2		44
	12	6 10.2	6 24.7	6 39.0	6 53.3	7 7.4	7 21.4	7 35.3	7 49.1	8 2.7	8 16.1	8 29.5	8 42.7		48
	8	5 13.5	5 28.2	5 42.7	5 57.3	6 11.7	6 25.9	6 40.2	6 54.2	7 8.2	7 22.0	7 35.7	7 49.2		52
	4	4 16.8	4 31.8	4 46.6	5 1.4	5 16.0	5 30.6	5 45.0	5 59.4	6 13.7	6 27.8	6 41.9	6 55.8	5	56
18	0	3 20.2	3 35.4	3 50.4	4 5.5	4 20.4	4 35.2	4 50.0	5 4.7	5 19.3	5 33.8	5 48.3	6 2.6	6	0

TRUE ALTITUDE OF BODY.

LATITUDE 15°.														
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	75 0.0	74 0.0	73 0.0	72 0.0	71 0.0	70 0.0	69 0.0	68 0.0	67 0.0	66 0.0	65 0.0	64 0.0	63 0.0	0 0
23 56	74 58.1	73 58.1	72 58.2	71 58.4	70 58.5	69 58.6	68 58.6	67 58.6	66 58.6	65 58.8	64 58.8	63 58.9	62 59.0	4
52	74 52.2	73 52.7	72 53.0	71 53.5	70 53.8	69 54.3	68 54.4	67 54.6	66 54.8	65 55.2	64 55.3	63 55.5	62 55.6	8
48	74 42.6	73 43.6	72 44.4	71 45.4	70 46.2	69 47.0	68 47.4	67 47.9	66 48.3	65 49.0	64 49.5	63 49.8	62 50.3	12
44	74 29.3	73 31.0	72 32.7	71 34.3	70 35.5	69 36.8	68 37.7	67 38.6	66 39.5	65 40.5	64 41.2	63 42.0	62 42.7	16
40	74 12.5	73 15.2	72 17.6	71 20.0	70 21.9	69 23.8	68 25.3	67 26.8	66 28.2	65 29.6	64 30.8	63 31.9	62 33.0	20
36	73 52.2	72 56.1	71 59.6	71 2.8	70 5.5	69 8.2	68 10.4	67 12.5	66 14.4	65 16.5	64 18.1	63 19.7	62 21.3	24
32	73 28.9	72 34.0	71 38.5	70 42.8	69 46.4	68 50.0	67 53.0	66 55.9	65 58.5	64 61.0	63 63.6	62 66.2	61 68.7	28
28	73 2.6	72 9.1	71 14.8	70 20.0	69 24.8	68 29.3	67 33.1	66 36.7	65 40.1	64 43.4	63 46.4	62 49.1	61 51.8	32
24	72 33.6	71 41.5	70 48.4	69 55.0	69 0.7	68 6.2	67 11.0	66 15.4	65 19.7	64 23.7	63 27.3	62 30.8	61 34.0	36
20	72 2.1	71 11.4	70 19.7	69 27.5	68 34.3	67 40.8	66 46.7	65 52.0	64 57.2	64 2.0	63 6.4	62 10.5	61 14.5	40
16	71 28.5	70 39.1	69 48.8	68 57.8	68 5.9	67 13.4	66 20.3	65 26.6	64 32.6	63 38.4	62 43.5	61 48.5	60 53.1	44
12	70 52.6	70 4.7	69 15.6	68 26.0	67 35.2	66 44.0	65 51.9	64 59.2	64 6.3	63 12.8	62 18.9	61 24.6	60 30.0	48
8	70 15.0	69 28.5	68 40.8	67 52.3	67 2.8	66 12.8	65 21.7	64 30.1	63 38.1	62 45.6	61 52.5	60 59.1	60 5.3	52
4	69 35.5	68 50.4	68 4.0	67 16.9	66 28.6	65 39.6	64 49.8	63 59.2	63 8.2	62 16.6	61 24.5	60 31.8	59 39.0	0 56
23 0	68 54.6	68 10.7	67 25.8	66 39.9	65 52.7	65 5.0	64 16.1	63 26.7	62 36.6	61 46.1	60 54.8	60 3.2	59 11.1	1 0
22 56	68 12.2	67 29.7	66 46.0	66 1.3	65 15.4	64 28.7	63 41.1	62 52.6	62 3.6	61 14.0	60 23.8	59 32.9	58 41.7	4
52	67 28.5	66 47.4	66 4.9	65 21.3	64 36.6	63 51.1	63 4.5	62 17.2	61 29.1	60 40.6	59 51.2	59 1.3	58 10.9	8
48	66 43.8	66 3.8	65 22.5	64 40.1	63 56.5	63 12.2	62 26.6	61 40.3	60 53.4	60 5.7	59 17.8	58 28.4	57 38.8	12
44	65 58.0	65 19.2	64 38.9	63 57.8	63 15.3	62 31.9	61 47.5	61 2.3	60 16.3	59 29.6	58 42.1	57 54.1	57 5.5	16
40	65 11.2	64 33.4	63 54.5	63 14.3	62 32.9	61 50.7	61 7.2	60 23.1	59 37.9	58 52.3	58 5.8	57 18.6	56 31.0	20
36	64 23.5	63 46.9	63 8.9	62 29.9	61 49.5	61 8.3	60 26.0	59 42.6	58 58.6	58 13.9	57 28.3	56 42.1	55 55.2	24
32	63 35.2	62 59.4	62 22.5	61 44.5	61 5.2	60 25.0	59 43.5	59 1.3	58 18.1	57 34.4	56 49.7	56 4.3	55 18.4	28
28	62 46.0	62 11.3	61 35.3	60 58.4	60 20.0	59 40.7	59 0.3	58 18.9	57 36.8	56 53.9	56 10.1	55 25.7	54 40.6	32
24	61 56.1	61 22.4	60 47.5	60 11.4	59 33.9	58 55.6	58 16.2	57 35.7	56 54.5	56 12.5	55 29.5	54 46.1	54 1.8	36
20	61 5.7	60 33.0	59 58.9	59 23.6	58 47.1	58 9.8	57 31.2	56 51.7	56 11.2	55 30.1	54 48.2	54 5.5	53 22.2	40
16	60 14.8	59 42.8	59 9.6	58 35.3	57 59.7	57 23.1	56 45.4	56 6.7	55 27.3	54 47.1	54 5.9	53 24.1	52 41.5	44
12	59 23.4	58 52.2	58 19.8	57 46.3	57 11.5	56 35.9	55 58.9	55 21.2	54 42.5	54 3.2	53 22.9	52 41.8	52 0.2	48
8	58 31.5	58 1.1	57 29.5	56 56.7	56 22.8	55 47.9	55 11.9	54 34.9	53 57.2	53 18.6	52 39.1	51 58.9	51 17.9	52
4	57 39.1	57 9.5	56 38.6	56 6.7	55 33.4	54 59.4	54 24.2	53 48.1	53 11.0	52 33.3	51 54.6	51 15.1	50 35.0	1 56
22 0	56 46.5	56 17.5	55 47.3	55 16.1	54 43.7	54 10.3	53 35.9	53 0.5	52 24.3	51 47.3	51 9.4	50 30.7	49 51.4	2 0
21 56	55 53.4	55 25.1	54 55.5	54 25.1	53 53.4	53 20.8	52 47.1	52 12.4	51 37.0	51 0.7	50 23.5	49 45.7	49 7.1	4
52	55 0.0	54 32.3	54 3.5	53 33.7	53 2.6	52 30.8	51 57.8	51 23.8	50 49.1	50 13.6	49 37.2	49 0.0	48 22.2	8
48	54 6.3	53 39.2	53 11.0	52 41.9	52 11.5	51 40.3	51 8.0	50 34.7	50 0.7	49 25.9	48 50.2	48 13.8	47 36.6	12
44	53 12.3	52 45.8	52 18.3	51 49.7	51 19.9	50 49.4	50 17.7	49 45.2	49 11.8	48 37.8	48 2.7	47 27.0	46 50.6	16
40	52 18.1	51 52.1	51 25.1	50 57.1	50 28.0	49 58.1	49 27.1	48 55.1	48 22.5	47 49.1	47 14.7	46 39.7	46 4.0	20
36	51 23.8	50 58.2	50 31.6	50 4.3	49 35.7	49 6.4	48 36.0	48 4.8	47 32.7	47 0.0	46 26.3	45 51.9	45 16.9	24
32	50 29.0	50 4.0	49 38.0	49 11.1	48 43.1	48 14.4	47 44.6	47 13.9	46 42.5	46 10.4	45 37.4	45 3.7	44 29.2	28
28	49 34.0	49 9.6	48 44.1	48 17.7	47 50.2	47 22.0	46 52.8	46 22.8	45 51.9	45 20.5	44 48.1	44 15.0	43 41.2	32
24	48 38.9	48 14.9	47 49.9	47 24.0	46 57.1	46 29.4	46 0.7	45 31.3	45 1.0	44 30.2	43 58.3	43 25.9	42 52.7	36
20	47 43.6	47 20.1	46 55.5	46 30.1	46 3.7	45 36.5	45 8.3	44 39.4	44 9.8	43 39.4	43 8.2	42 36.4	42 3.8	40
16	46 48.1	46 24.9	46 0.9	45 35.9	45 10.0	44 43.3	44 15.7	43 47.3	43 18.2	42 48.4	42 17.8	41 46.5	41 14.6	44
12	45 52.5	45 29.8	45 6.2	44 41.6	44 16.1	43 49.9	43 22.8	42 54.9	42 26.2	41 57.0	41 27.0	40 56.3	40 24.9	48
8	44 56.7	44 34.3	44 11.1	43 46.9	43 22.0	42 56.2	42 29.6	42 2.2	41 34.1	41 5.4	40 35.8	40 5.8	39 35.0	52
4	44 0.9	43 38.8	43 15.8	42 52.2	42 27.6	42 2.3	41 36.2	41 9.3	40 41.7	40 13.5	39 44.5	39 14.8	38 44.6	2 56
21 0	43 4.8	42 43.0	42 20.5	41 57.3	41 33.1	41 8.2	40 42.5	40 16.1	39 49.0	39 21.3	38 52.8	38 23.7	37 53.9	3 0

LATITUDE 15°.

Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	62 0.0	61 0.0	60 0.0	59 0.0	58 0.0	57 0.0	56 0.0	55 0.0	54 0.0	53 0.0	52 0.0	51 0.0	0 0
23 56	61 58.9	60 59.0	59 58.9	58 58.9	57 59.1	56 59.1	55 59.2	54 59.1	53 59.3	52 59.2	51 59.3	50 59.3	4
52	61 55.8	60 56.0	59 56.1	58 56.3	57 56.4	56 56.4	55 56.6	54 56.7	53 56.9	52 56.9	51 57.0	50 57.1	8
48	61 50.6	60 51.0	59 51.2	58 51.6	57 51.8	56 52.0	55 52.3	54 52.5	53 52.9	52 53.0	51 53.2	50 53.4	12
44	61 43.3	60 44.0	59 44.4	58 45.0	57 45.5	56 45.9	55 46.4	54 46.7	53 47.2	52 47.6	51 48.0	50 48.3	16
40	61 34.0	60 35.0	59 35.8	58 36.6	57 37.4	56 38.0	55 38.7	54 39.3	53 40.1	52 40.6	51 41.2	50 41.7	20
36	61 22.6	60 24.1	59 25.3	58 26.3	57 27.4	56 28.4	55 29.5	54 30.3	53 31.4	52 32.1	51 32.9	50 33.8	24
32	61 9.3	60 11.2	59 12.8	58 14.4	57 15.8	56 17.1	55 18.6	54 19.8	53 21.0	52 22.1	51 23.2	50 24.3	28
28	60 54.0	59 56.5	58 58.5	58 0.7	57 2.5	56 4.2	55 6.1	54 7.6	53 9.3	52 10.6	51 12.1	50 13.5	32
24	60 37.0	59 39.9	58 42.6	57 45.1	56 47.5	55 49.7	54 51.9	53 53.9	52 56.0	51 57.8	50 59.5	50 1.3	36
20	60 18.1	59 21.7	58 25.0	57 28.0	56 30.9	55 33.5	54 36.3	53 38.7	52 41.2	51 43.4	50 45.6	49 47.6	40
16	59 57.4	59 1.6	58 5.5	57 9.2	56 12.6	55 15.8	54 19.1	53 22.0	52 25.0	51 27.6	50 30.2	49 32.8	44
12	59 35.0	58 40.0	57 44.4	56 48.8	55 52.8	54 56.6	54 0.4	53 3.9	52 7.3	51 10.5	50 13.6	49 16.6	48
8	59 11.1	58 16.7	57 21.8	56 26.9	55 31.5	54 35.9	53 40.3	52 44.3	51 48.4	50 52.0	49 55.6	48 59.1	52
4	58 45.5	57 51.9	56 57.7	56 3.5	55 8.8	54 13.9	53 18.7	52 23.4	51 28.0	50 32.3	49 36.4	48 40.3	0 56
23 0	58 18.4	57 25.6	56 32.1	55 38.6	54 44.6	53 50.3	52 55.9	52 1.1	51 6.4	50 11.2	49 15.8	48 20.3	1 0
22 56	57 49.8	56 57.8	56 5.2	55 12.4	54 19.0	53 25.5	52 31.7	51 37.6	50 43.4	49 48.8	48 54.1	47 59.1	4
52	57 20.0	56 28.7	55 36.9	54 44.7	53 52.2	52 59.4	52 6.3	51 12.8	50 19.2	49 25.2	48 31.1	47 36.7	8
48	56 48.6	55 58.4	55 7.2	54 15.9	53 24.1	52 32.0	51 39.6	50 46.8	49 53.9	49 0.5	48 6.9	47 13.2	12
44	56 16.2	55 26.6	54 36.4	53 45.8	52 54.8	52 3.4	51 11.7	50 19.6	49 27.3	48 34.6	47 41.7	46 48.5	16
40	55 42.5	54 53.8	54 4.3	53 14.5	52 24.3	51 33.6	50 42.7	49 51.2	48 59.7	48 7.6	47 15.4	46 22.8	20
36	55 7.7	54 19.8	53 31.2	52 42.2	51 52.7	51 2.8	50 12.5	49 21.8	48 30.9	47 39.5	46 47.9	45 56.0	24
32	54 31.7	53 44.7	52 56.9	52 8.7	51 20.0	50 30.8	49 41.3	48 51.3	48 1.2	47 10.4	46 19.5	45 28.2	28
28	53 54.8	53 8.6	52 21.6	51 34.3	50 46.2	49 57.8	49 9.1	48 19.8	47 30.3	46 40.3	45 50.0	44 59.5	32
24	53 16.9	52 31.5	51 45.3	50 58.7	50 11.6	49 23.8	48 35.8	47 47.3	46 58.6	46 9.2	45 19.7	44 29.8	36
20	52 38.0	51 53.4	51 8.0	50 22.2	49 35.8	48 49.0	48 1.7	47 13.9	46 25.8	45 37.2	44 48.4	43 59.1	40
16	51 58.3	51 14.4	50 29.9	49 44.9	48 59.3	48 13.1	47 26.6	46 39.5	45 52.2	45 4.4	44 16.1	43 27.6	44
12	51 17.6	50 34.7	49 50.8	49 6.7	48 21.8	47 36.4	46 50.7	46 4.4	45 17.8	44 30.5	43 43.0	42 55.1	48
8	50 36.3	49 54.0	49 11.1	48 27.6	47 43.5	46 58.9	46 13.9	45 28.3	44 42.4	43 55.9	43 9.0	42 21.9	52
4	49 54.0	49 12.7	48 30.4	47 47.7	47 4.4	46 20.6	45 36.3	44 51.4	44 6.3	43 20.5	42 34.4	41 47.9	1 56
22 0	49 11.2	48 30.5	47 49.2	47 7.2	46 24.6	45 41.5	44 57.9	44 13.8	43 29.3	42 44.3	41 58.9	41 13.1	2 0
21 56	48 27.7	47 47.8	47 7.1	46 25.9	45 44.1	45 1.6	44 18.8	43 35.4	42 51.7	42 7.3	41 22.7	40 37.6	4
52	47 43.5	47 4.4	46 24.4	45 44.0	45 2.8	44 21.1	43 39.0	42 56.3	42 13.3	41 29.7	40 45.7	40 1.3	8
48	46 58.7	46 20.3	45 41.1	45 1.3	44 20.9	43 39.9	42 58.5	42 16.6	41 34.3	40 51.3	40 8.0	39 24.3	12
44	46 13.3	45 35.7	44 57.1	44 18.1	43 38.4	42 58.1	42 17.5	41 36.2	40 54.6	40 12.3	39 29.6	38 46.6	16
40	45 27.5	44 50.4	44 12.6	43 34.3	42 55.3	42 15.7	41 35.7	40 55.2	40 14.2	39 32.7	38 50.7	38 8.3	20
36	44 41.0	44 4.7	43 27.5	42 49.9	42 11.6	41 32.7	40 53.5	40 13.5	39 33.3	38 52.3	38 11.1	37 29.4	24
32	43 54.1	43 18.4	42 42.0	42 4.9	41 27.4	40 49.2	40 10.6	39 31.3	38 51.7	38 11.5	37 30.9	36 49.9	28
28	43 6.6	42 31.7	41 55.8	41 19.6	40 42.6	40 5.1	39 27.1	38 48.6	38 9.7	37 30.1	36 50.1	36 9.8	32
24	42 18.9	41 44.5	41 9.3	40 33.7	39 57.4	39 20.5	38 43.2	38 5.3	37 27.0	36 48.1	36 8.8	35 29.1	36
20	41 30.6	40 56.9	40 22.3	39 47.3	39 11.6	38 35.4	37 58.7	37 21.5	36 43.8	36 5.6	35 27.0	34 47.9	40
16	40 41.9	40 8.8	39 34.9	39 0.4	38 25.4	37 49.8	37 13.8	36 37.1	36 0.2	35 22.6	34 44.6	34 6.3	44
12	39 52.9	39 20.3	38 47.0	38 13.2	37 38.8	37 3.8	36 28.4	35 52.5	35 16.1	34 39.1	34 1.8	33 24.1	48
8	39 3.5	38 31.5	37 58.7	37 25.6	36 51.8	36 17.4	35 42.6	35 7.2	34 31.5	33 55.2	33 18.5	32 41.4	52
4	38 13.7	37 42.3	37 10.1	36 37.5	36 4.3	35 30.6	34 56.4	34 21.6	33 46.5	33 10.8	32 34.7	31 58.3	2 56
21 0	37 23.6	36 52.8	36 21.1	35 49.1	35 16.5	34 43.3	34 9.7	33 35.6	33 1.1	32 26.0	31 50.6	31 14.7	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 15°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
15 0	21 0	43 4.8	42 43.0	42 20.5	41 57.3	41 33.1	41 8.2	40 42.5	40 16.1	39 49.0	39 21.3	38 52.8	38 23.7	37 53.9	3 0	9 0	
4	20 56	42 8.6	41 47.3	41 25.0	41 2.1	40 38.3	40 13.9	39 48.6	39 22.7	38 56.0	38 28.8	38 0.8	37 32.2	37 3.0	4	8 56	
8	52	41 12.4	40 51.3	40 29.4	40 6.8	39 43.4	39 19.4	38 54.6	38 29.0	38 2.9	37 36.1	37 8.6	36 40.5	36 11.8	8	52	
12	48	40 15.9	39 55.2	39 33.6	39 11.5	38 48.4	38 24.8	38 0.3	37 35.2	37 9.4	36 43.1	36 16.1	35 48.6	35 20.3	12	48	
16	44	39 19.4	38 59.0	38 37.7	38 15.9	37 53.2	37 29.9	37 5.9	36 41.1	36 15.8	35 49.9	35 23.4	34 56.2	34 28.5	16	44	
20	40	38 22.8	38 2.6	37 41.8	37 20.2	36 57.8	36 35.0	36 11.2	35 46.9	35 22.0	34 56.6	34 30.4	34 3.7	33 36.5	20	40	
24	36	37 26.2	37 6.2	36 45.6	36 24.4	36 2.4	35 39.8	35 16.5	34 52.5	34 28.0	34 2.9	33 37.2	33 11.0	32 44.2	24	36	
28	32	36 29.4	36 9.7	35 49.4	35 28.4	35 6.7	34 44.5	34 21.5	33 58.0	33 33.8	33 9.2	32 43.9	32 18.1	31 51.7	28	32	
32	28	35 32.6	35 13.1	34 53.0	34 32.4	34 10.9	33 49.1	33 26.4	33 3.2	32 39.5	32 15.2	31 50.3	31 24.9	30 59.0	32	28	
36	24	34 35.6	34 16.5	33 56.6	33 36.2	33 15.1	32 53.5	32 31.2	32 8.3	31 44.9	31 21.1	30 56.5	30 31.6	30 6.1	36	24	
40	20	33 38.6	33 19.7	33 0.0	32 39.9	32 19.1	31 57.8	31 35.8	31 13.3	30 50.2	30 26.7	30 2.6	29 38.0	29 13.0	40	20	
44	16	32 41.6	32 22.8	32 3.5	31 43.6	31 23.0	31 1.9	30 40.3	30 18.1	29 55.4	29 32.3	29 8.6	28 44.4	28 19.7	44	16	
48	12	31 44.5	31 25.9	31 6.8	30 47.2	30 26.8	30 6.1	29 44.7	29 22.8	29 0.4	28 37.7	28 14.3	27 50.5	27 26.3	48	12	
52	8	30 47.3	30 28.9	30 10.0	29 50.6	29 30.6	29 10.0	28 48.9	28 27.3	28 5.3	27 42.9	27 19.9	26 56.5	26 32.6	52	8	
15 56	4	29 50.1	29 31.8	29 13.1	28 54.0	28 34.2	28 13.9	27 53.1	27 31.8	27 10.1	26 48.0	26 25.3	26 2.3	25 38.8	3 56	4	
16 0	20 0	28 52.7	28 34.7	28 16.2	27 57.2	27 37.6	27 17.7	26 57.2	26 36.2	26 14.7	25 52.9	25 30.6	25 7.9	24 44.8	4 0	8 0	
4	19 56	27 55.4	27 37.6	27 19.2	27 0.4	26 41.1	26 21.4	26 1.1	25 40.4	25 19.3	24 57.8	24 35.8	24 13.4	23 50.6	4	7 56	
8	52	26 58.0	26 40.3	26 22.1	26 3.6	25 44.5	25 25.0	25 5.0	24 44.6	24 23.7	24 2.5	23 40.8	23 18.7	22 56.3	8	52	
12	48	26 0.6	25 43.0	25 25.0	25 6.7	24 47.8	24 28.5	24 8.7	23 48.5	23 28.0	23 7.1	22 45.7	22 24.0	22 1.9	12	48	
16	44	25 3.1	24 45.7	24 27.9	24 9.7	23 51.0	23 32.0	23 12.4	22 52.5	22 32.2	22 11.6	21 50.5	21 29.1	21 7.4	16	44	
20	40	24 5.6	23 48.3	23 30.7	23 12.7	22 54.1	22 35.3	22 16.0	21 56.3	21 36.3	21 16.0	20 55.2	20 34.1	20 12.7	20	40	
24	36	23 8.0	22 50.9	22 33.4	22 15.6	21 57.2	21 38.6	21 19.5	21 0.1	20 40.3	20 20.3	19 59.8	19 39.0	19 17.9	24	36	
28	32	22 10.4	21 53.5	21 36.1	21 18.4	21 0.2	20 41.8	20 22.9	20 3.7	19 44.2	19 24.4	19 4.3	18 43.8	18 23.0	28	32	
32	28	21 12.8	20 56.0	20 38.7	20 21.2	20 3.2	19 45.0	19 26.3	19 7.3	18 48.1	18 28.6	18 8.6	17 48.4	17 27.9	32	28	
36	24	20 15.2	19 58.4	19 41.3	19 23.9	19 6.1	18 48.1	18 29.6	18 10.9	17 51.8	17 32.5	17 12.9	16 52.9	16 32.7	36	24	
40	20	19 17.4	19 0.8	18 43.8	18 26.6	18 9.0	17 51.1	17 32.8	17 14.3	16 55.5	16 36.4	16 17.0	15 57.4	15 37.5	40	20	
44	16	18 19.7	18 3.2	17 46.3	17 29.3	17 11.8	16 54.1	16 36.0	16 17.6	15 59.0	15 40.2	15 21.1	15 1.7	14 42.2	44	16	
48	12	17 22.0	17 5.6	16 48.8	16 31.9	16 14.6	15 57.0	15 39.1	15 20.9	15 2.5	14 44.0	14 25.1	14 6.0	13 46.6	48	12	
52	8	16 24.2	16 7.9	15 51.3	15 34.4	15 17.3	14 59.9	14 42.1	14 24.2	14 6.0	13 47.6	13 29.0	13 10.2	12 51.1	52	8	
16 56	4	15 26.4	15 10.2	14 53.7	14 37.0	14 19.9	14 2.7	13 45.1	13 27.4	13 9.4	12 51.3	12 32.8	12 14.3	11 55.5	4 56	4	
17 0	19 0	14 28.7	14 12.5	13 56.1	13 39.5	13 22.6	13 5.5	12 48.1	12 30.5	12 12.7	11 54.8	11 36.6	11 18.2	10 59.7	5 0	7 0	
4	18 56	13 30.9	13 14.8	12 58.4	12 41.9	12 25.1	12 8.2	11 50.9	11 33.6	11 15.9	10 58.2	10 40.3	10 22.2	10 3.8	4	6 56	
8	52	12 33.0	12 17.0	12 0.7	11 44.3	11 27.6	11 10.8	10 53.8	10 36.5	10 19.2	10 1.6	9 43.9	9 26.0	9 8.0	8	52	
12	48	11 35.1	11 19.2	11 3.0	10 46.7	10 30.1	10 13.5	9 56.6	9 39.4	9 22.3	9 5.0	8 47.4	8 29.8	8 12.0	12	48	
16	44	10 37.2	10 21.4	10 5.3	9 49.1	9 32.6	9 16.1	8 59.3	8 42.4	8 25.4	8 8.2	7 50.9	7 33.5	7 15.9	16	44	
20	40	9 39.4	9 23.5	9 7.5	8 51.4	8 35.0	8 18.7	8 2.0	7 45.2	7 28.4	7 11.5	6 54.3	6 37.1	6 19.8	20	40	
24	36	8 41.5	8 25.6	8 9.7	7 53.7	7 37.5	7 21.2	7 4.6	6 48.0	6 31.3	6 14.6	5 57.7	5 40.7	5 23.6	24	36	
28	32	7 43.6	7 27.8	7 11.9	6 56.0	6 39.9	6 23.7	6 7.3	5 50.8	5 34.3	5 17.7	5 1.0	4 44.2	4 27.3	28	32	
32	28	6 45.6	6 29.9	6 14.1	5 58.2	5 42.1	5 26.1	5 9.9	4 53.5	4 37.2	4 20.8	4 4.2	3 47.6	3 31.0	32	28	
36	24	5 47.7	5 32.0	5 16.2	5 0.4	4 44.5	4 28.5	4 12.4	3 56.2	3 40.0	3 23.8	3 7.4	2 51.0	2 34.6	36	24	
40	20	4 49.8	4 34.1	4 18.4	4 2.6	3 46.8	3 30.9	3 14.9	2 58.9	2 42.8	2 26.7	2 10.5	1 54.3	1 38.1	40	20	
44	16	3 51.8	3 36.2	3 20.5	3 4.9	2 49.0	2 33.3	2 17.4	2 1.4	1 45.5	1 29.6	1 13.6	0 57.6	0 41.6	44	16	
48	12	2 53.9	2 38.3	2 22.7	2 7.0	1 51.3	1 35.6	1 19.8	1 4.0	0 48.2	0 32.5	0 16.6	0 0.8	0 15.0	48	12	
52	8	1 55.9	1 40.3	1 24.7	1 9.2	0 53.5	0 38.0	0 22.2	0 6.5	0 9.1	0 24.7	0 40.4	0 56.0	1 11.6	52	8	
17 56	4	0 58.0	0 42.3	0 26.8	0 11.4	0 4.2	0 19.8	0 35.4	0 51.0	1 6.5	1 22.0	1 37.5	1 52.9	2 8.3	5 56	4	
18 0	18 0	0 0.0	0 15.5	0 31.0	0 46.6	1 2.1	1 17.6	1 33.0	1 48.4	2 3.8	2 19.2	2 34.5	2 49.8	3 5.1	6 0	6 0	

The heavy zigzag line is the horizon line and separates contrary names from same names.

LATITUDE 15°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.			
		Declination		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°			23°	24°
Same Name.	Contrary Name.	Contrary Name.	Same Name.														
h. m.	h. m.	h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	h. m.
15 0	21 0	37 23.6	36 52.8	36 21.1	35 49.1	35 16.5	34 43.3	34 9.7	33 35.6	33 1.1	32 26.0	31 50.6	31 14.7	3 0	9 0		
4	20 56	36 33.2	36 2.9	35 31.8	35 0.4	34 28.3	33 55.7	33 22.8	32 49.2	32 15.3	31 40.8	31 5.9	30 30.7	4	8 56		
8	52	35 42.4	35 12.6	34 42.2	34 11.3	33 39.8	33 7.8	32 35.4	32 2.4	31 29.1	30 55.2	30 20.9	29 46.3	8	52		
12	48	34 51.4	34 22.3	33 52.2	33 21.8	32 50.9	32 19.4	31 47.6	31 15.2	30 42.5	30 9.2	29 35.5	29 1.5	12	48		
16	44	34 0.2	33 31.4	33 1.9	32 32.1	32 1.7	31 30.8	30 59.5	30 27.7	29 55.5	29 22.8	28 49.8	28 16.3	16	44		
20	40	33 8.7	32 40.4	32 11.5	31 42.1	31 12.2	30 41.9	30 11.1	29 39.8	29 8.3	28 36.1	28 3.6	27 30.7	20	40		
24	36	32 16.8	31 49.1	31 20.7	30 51.8	30 22.4	29 52.6	29 22.4	28 51.7	28 20.6	27 49.0	27 17.1	26 44.9	24	36		
28	32	31 24.8	30 57.5	30 29.6	30 1.3	29 32.4	29 3.0	28 33.4	28 3.2	27 32.7	27 1.7	26 30.3	25 58.6	28	32		
32	28	30 32.6	30 5.8	29 38.2	29 10.5	28 42.1	28 13.2	27 44.1	27 14.4	26 44.5	26 14.0	25 43.2	25 12.0	32	28		
36	24	29 40.1	29 13.7	28 46.7	28 19.3	27 51.5	27 23.1	26 54.5	26 25.3	25 55.9	25 26.0	24 55.8	24 25.2	36	24		
40	20	28 47.4	28 21.5	27 54.9	27 28.1	27 0.6	26 32.8	26 4.7	25 36.0	25 7.1	24 37.7	24 8.0	23 37.9	40	20		
44	16	27 54.6	27 29.0	27 2.9	26 36.5	26 9.6	25 42.2	25 14.6	24 46.5	24 18.1	23 49.1	23 19.9	22 50.4	44	16		
48	12	27 1.4	26 36.4	26 10.7	25 44.7	25 18.2	24 51.4	24 24.2	23 56.6	23 28.7	23 0.3	22 31.6	22 2.6	48	12		
52	8	26 8.2	25 43.5	25 18.3	24 52.7	24 26.7	24 0.3	23 33.7	23 6.5	22 39.1	22 11.2	21 43.1	21 14.6	52	8		
15 56	4	25 14.7	24 50.5	24 25.6	24 0.6	23 35.0	23 9.1	22 42.8	22 16.2	21 49.2	21 21.9	20 54.3	20 26.3	3 56	4		
16 0	20 0	24 21.2	23 57.3	23 32.9	23 8.2	22 43.1	22 17.6	21 51.8	21 25.6	20 59.2	20 32.3	20 5.2	19 37.8	4 0	8 0		
4	19 56	23 27.4	23 3.9	22 39.9	22 15.7	21 50.9	21 25.9	21 0.5	20 34.8	20 8.9	19 42.5	19 15.9	18 49.0	4	7 56		
8	52	22 33.5	22 10.4	21 46.8	21 22.9	20 58.6	20 33.9	20 9.1	19 43.8	19 18.4	18 52.5	18 26.4	17 59.9	8	52		
12	48	21 39.4	21 16.7	20 53.5	20 30.0	20 6.1	19 41.9	19 17.4	18 52.7	18 27.6	18 2.3	17 36.6	17 10.7	12	48		
16	44	20 45.2	20 22.9	20 0.0	19 36.9	19 13.4	18 49.6	18 25.7	18 1.2	17 36.8	17 11.8	16 46.6	16 21.2	16	44		
20	40	19 50.9	19 28.8	19 6.3	18 43.7	18 20.6	17 57.2	17 33.6	17 9.7	16 45.6	16 21.1	15 56.4	15 31.5	20	40		
24	36	18 56.4	18 34.7	18 12.6	17 50.3	17 27.6	17 4.6	16 41.5	16 17.9	15 54.3	15 30.2	15 6.1	14 41.6	24	36		
28	32	18 1.8	17 40.5	17 18.7	16 56.7	16 34.4	16 11.9	15 49.1	15 26.0	15 2.8	14 39.2	14 15.5	13 51.5	28	32		
32	28	17 7.1	16 46.1	16 24.6	16 3.0	15 41.1	15 19.0	14 56.6	14 33.9	14 11.2	13 48.0	13 24.7	13 1.2	32	28		
36	24	16 12.2	15 51.6	15 30.5	15 9.3	14 47.7	14 25.9	14 3.9	13 41.7	13 19.3	12 56.6	12 33.8	12 10.8	36	24		
40	20	15 17.3	14 56.9	14 36.2	14 15.3	13 54.1	13 32.7	13 11.1	12 49.3	12 27.3	12 5.1	11 42.7	11 20.0	40	20		
44	16	14 22.2	14 2.2	13 41.8	13 21.2	13 0.4	12 39.3	12 18.2	11 56.7	11 35.2	11 13.3	10 51.4	10 29.2	44	16		
48	12	13 27.1	13 7.3	12 47.2	12 27.0	12 6.6	11 45.9	11 25.1	11 4.0	10 42.9	10 21.5	9 59.9	9 38.3	48	12		
52	8	12 31.8	12 12.3	11 52.5	11 32.7	11 12.6	10 52.3	10 31.9	10 11.2	9 50.4	9 29.4	9 8.3	8 47.1	52	8		
16 56	4	11 36.4	11 17.2	10 57.8	10 38.2	10 18.5	9 58.5	9 38.5	9 18.2	8 57.8	8 37.3	8 16.6	7 55.8	4 56	4		
17 0	19 0	10 40.9	10 22.1	10 2.9	9 43.7	9 24.3	9 4.7	8 45.0	8 25.1	8 5.2	7 44.9	7 24.7	7 4.3	5 0	7 0		
4	18 56	9 45.4	9 26.8	9 8.0	8 49.1	8 30.0	8 10.7	7 51.3	7 31.9	7 12.3	6 52.5	6 32.7	6 12.7	4	6 56		
8	52	8 49.7	8 31.5	8 12.9	7 54.3	7 35.5	7 16.6	6 57.6	6 38.5	6 19.3	5 59.9	5 40.5	5 21.0	8	52		
12	48	7 54.0	7 36.0	7 17.8	6 59.5	6 41.0	6 22.4	6 3.8	5 45.0	5 26.2	5 7.2	4 48.2	4 29.1	12	48		
16	44	6 58.2	6 40.5	6 22.5	6 4.5	5 46.4	5 28.1	5 9.9	4 51.4	4 33.0	4 14.4	3 55.7	3 37.1	16	44		
20	40	6 2.4	5 44.9	5 27.2	5 9.5	4 51.6	4 33.7	4 15.8	3 57.7	3 39.7	3 21.4	3 3.2	2 44.9	20	40		
24	36	5 6.4	4 49.2	4 31.8	4 14.3	3 56.8	3 39.2	3 21.6	3 3.9	2 46.2	2 28.3	2 10.5	1 52.7	24	36		
28	32	4 10.3	3 53.4	3 36.2	3 19.1	3 1.9	2 44.6	2 27.4	2 9.9	1 52.6	1 35.2	1 17.8	1 0.3	28	32		
32	28	3 14.2	2 57.5	2 40.7	2 23.8	2 6.9	1 49.9	1 32.9	1 15.9	0 59.0	0 41.9	0 24.9	0 7.8	32	28		
36	24	2 18.1	2 1.6	1 45.0	1 28.5	1 11.8	0 55.1	0 38.5	0 21.8	0 5.2	0 11.5	0 28.2	0 44.8	36	24		
40	20	1 21.8	1 5.6	0 49.2	0 33.0	0 16.6	0 0.2	0 16.0	0 32.4	0 48.6	1 5.0	1 21.2	1 37.5	40	20		
44	16	0 25.5	0 9.6	0 6.6	0 22.6	0 38.6	0 54.7	1 10.7	1 26.7	1 42.6	1 58.6	2 14.5	2 30.3	44	16		
48	12	0 30.8	0 46.6	1 2.5	1 18.2	1 34.0	1 49.7	2 5.4	2 21.1	2 36.6	2 52.3	3 7.8	3 23.3	48	12		
52	8	1 27.3	1 42.8	1 58.4	2 13.9	2 29.3	2 44.8	3 0.2	3 15.5	3 30.8	3 46.0	4 1.2	4 16.3	52	8		
17 56	4	2 23.8	2 39.0	2 54.4	3 9.6	3 24.8	3 40.0	3 55.1	4 10.7	4 25.0	4 39.9	4 54.7	5 9.4	5 56	4		
18 0	18 0	3 20.2	3 35.4	3 50.4	4 5.5	4 20.4	4 35.3	4 50.0	5 4.7	5 19.3	5 33.8	5 48.3	6 2.6	6 0	6 0		

LATITUDE 16°.															
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	74 0 0	75 0 0	76 0 0	77 0 0	78 0 0	79 0 0	80 0 0	81 0 0	82 0 0	83 0 0	84 0 0	85 0 0	86 0 0	0 0	0
23 56	73 58.2	74 58.1	75 57.9	76 57.7	77 57.7	78 57.4	79 57.1	80 56.8	81 56.4	82 55.9	83 55.3	84 54.4	85 53.0	4	4
52	73 52.7	74 52.2	75 51.7	76 51.1	77 50.3	78 49.6	79 48.7	80 47.3	81 45.8	82 43.9	83 41.5	84 38.1	85 33.2	8	8
48	73 43.7	74 42.5	75 41.5	76 40.1	77 38.7	78 36.7	79 34.6	80 31.9	81 28.7	82 24.7	83 19.6	84 12.7	85 3.2	12	12
44	73 31.2	74 29.5	75 27.4	76 25.0	77 22.4	78 19.2	79 15.4	80 11.0	81 5.6	82 0.8	83 50.7	84 39.9	85 25.6	16	16
40	73 15.4	74 12.7	75 9.5	76 6.1	77 1.9	78 57.2	79 51.8	80 45.3	81 37.4	82 28.0	83 16.3	84 1.5	85 42.7	20	20
36	72 56.4	73 52.6	74 48.2	75 43.3	76 37.7	77 31.2	78 23.9	79 15.2	80 4.7	81 52.3	82 37.4	83 19.0	84 56.2	24	24
32	72 34.4	73 29.4	74 23.6	75 17.3	76 10.1	77 1.8	78 52.3	79 41.4	80 28.2	81 13.0	82 55.0	83 38.2	84 7.0	28	28
28	72 9.5	73 3.2	74 56.1	75 48.3	76 39.3	77 29.1	78 17.5	79 4.2	80 78.4	81 59.3	82 30.9	83 8.0	84 45.2	32	32
24	71 42.0	72 34.4	73 25.8	74 16.3	75 5.6	76 53.4	77 39.8	78 24.4	79 6.7	80 78.4	81 46.3	82 79.2	83 55.4	36	36
20	71 12.1	72 3.0	73 52.9	74 41.8	75 29.5	76 15.3	77 59.8	78 42.2	79 22.3	80 77.5	81 59.6	82 78.3	83 79.4	40	40
16	70 39.9	71 29.4	72 17.9	73 5.1	74 50.9	75 35.0	76 17.8	77 58.1	78 36.0	79 77.1	80 55.0	81 77.4	82 78.1	44	44
12	70 5.7	71 53.7	72 40.7	73 26.4	74 10.6	75 52.9	76 33.7	77 12.2	78 48.3	79 21.7	80 51.9	81 77.1	82 77.4	48	48
8	69 29.5	70 16.3	71 1.6	72 45.8	73 28.4	74 9.2	75 48.2	76 24.9	77 4.9	78 59.3	79 30.9	80 75.5	81 76.2	52	52
4	68 51.6	69 36.9	70 21.0	71 3.6	72 44.7	73 23.9	74 7.3	75 36.4	76 4.4	77 9.2	78 39.2	79 27.5	80 6.3	56	56
23 0	68 12.2	69 56.2	70 38.9	71 20.0	72 59.6	73 37.3	74 13.2	75 46.9	76 18.1	77 46.7	78 12.7	79 35.3	80 54.6	1 0	0
22 56	67 31.3	68 13.9	69 55.5	70 34.9	71 13.2	72 40.5	73 57.1	74 24.0	75 56.3	76 26.3	77 53.6	78 18.3	79 40.1	4	4
52	66 49.1	67 30.5	68 10.6	69 49.0	70 25.9	71 0.8	72 30.4	73 17.1	74 4.9	75 33.8	76 2.0	77 23.7	78 44.4	8	8
48	66 5.7	67 45.8	68 24.7	69 1.9	70 68.3	71 56.9	72 11.3	73 69.4	74 37.0	75 13.2	76 40.6	77 5.9	78 71.4	12	12
44	65 21.2	66 0.1	67 37.9	68 13.8	69 47.4	70 21.0	71 68.5	72 8.6	73 20.6	74 47.1	75 17.0	76 11.4	77 33.2	16	16
40	64 35.6	65 13.6	66 50.2	67 24.9	68 58.4	69 29.8	70 59.8	71 27.5	72 56.8	73 16.9	74 46.9	75 37.4	76 56.0	20	20
36	63 49.2	64 26.0	65 1.8	66 35.5	67 7.7	68 38.2	69 7.1	70 67.3	71 34.1	72 58.5	73 21.2	74 68.4	75 59.4	24	24
32	63 2.0	63 37.8	64 12.3	65 4.1	66 16.5	67 46.1	68 14.1	69 39.9	70 67.3	71 3.8	72 57.6	73 45.5	74 68.1	28	28
28	62 14.0	63 48.8	64 22.5	65 54.3	66 24.8	67 53.4	68 20.5	69 56.5	70 45.6	71 8.8	72 30.1	73 66.4	74 5.9	32	32
24	61 25.2	62 59.2	63 31.9	64 6.3	65 2.9	66 32.4	67 0.3	68 26.5	69 54.1	70 6.5	71 13.5	72 65.5	73 52.7	36	36
20	60 35.9	61 9.0	62 40.9	63 10.9	64 62.3	65 39.7	66 6.3	67 32.4	68 46.3	69 56.2	70 17.9	71 38.0	72 56.0	40	40
16	59 46.0	60 18.2	61 49.3	62 18.6	63 46.5	64 62.1	65 12.8	66 37.8	67 63.0	68 9.9	69 22.6	70 41.7	71 59.3	44	44
12	58 55.5	59 27.0	60 57.2	61 25.7	62 53.1	63 16.1	64 18.7	65 61.4	66 43.0	67 5.5	68 26.3	69 45.3	70 63.3	48	48
8	58 4.5	58 35.2	59 4.6	59 32.6	60 59.2	61 24.3	62 36.0	63 47.9	64 9.9	65 30.1	66 16.1	67 48.8	68 5.7	52	52
4	57 13.1	57 43.0	58 11.9	58 38.9	59 5.0	60 29.5	61 59.5	62 6.0	63 14.1	64 60.3	65 33.9	66 52.1	67 8.6	56	56
22 0	56 21.2	57 50.5	58 18.7	59 45.3	60 10.6	61 38.4	62 58.1	63 57.1	64 15.9	65 37.5	66 55.3	67 11.5	68 26.0	2 0	0
21 56	55 29.0	56 57.6	57 25.1	58 51.2	59 16.0	60 39.3	61 58.1	62 53.8	63 1.4	64 22.0	65 41.0	66 58.4	67 14.3	4	4
52	54 36.4	55 4.4	56 31.3	57 56.6	58 21.1	59 43.9	60 57.5	61 25.6	62 44.3	63 58.1	64 5.5	65 17.1	66 31.1	8	8
48	53 43.5	54 10.9	55 37.2	56 5.1	57 25.9	58 48.3	59 56.9	60 29.3	61 56.4	62 47.5	63 57.4	64 19.9	65 33.6	12	12
44	52 50.2	53 17.0	54 42.9	55 7.3	56 30.6	57 52.5	58 13.4	59 55.3	60 32.8	61 50.7	62 7.3	63 22.5	64 36.1	16	16
40	51 56.7	52 23.0	53 48.3	54 12.3	55 35.1	56 56.6	57 17.0	58 54.1	59 36.1	60 53.8	61 10.1	62 25.0	63 38.7	20	20
36	51 2.9	51 28.7	52 53.5	53 17.0	54 39.4	55 0.5	56 20.5	57 33.9	58 53.5	59 56.8	60 12.9	61 27.7	62 41.1	24	24
32	50 8.9	50 34.2	51 58.5	52 21.6	53 43.6	54 4.4	55 24.1	56 42.5	57 59.7	58 53.1	59 15.7	60 30.3	61 43.5	28	28
28	49 14.6	49 39.4	50 3.3	51 26.0	52 47.6	53 8.0	54 21.5	55 45.6	56 2.5	57 18.3	58 32.7	59 45.9	60 57.7	32	32
24	48 20.1	48 44.5	49 8.0	49 30.2	50 51.5	51 6.5	52 30.7	53 48.7	54 5.4	55 20.8	56 35.2	57 48.3	58 0.1	36	36
20	47 25.4	47 49.4	48 12.5	48 34.3	49 55.3	50 15.0	49 33.9	49 51.6	50 8.1	51 23.4	52 37.6	53 50.6	54 51.2	40	40
16	46 30.5	46 54.1	47 16.8	47 38.3	48 58.9	49 18.5	48 37.0	48 54.4	49 10.8	49 26.0	49 40.1	49 52.9	50 4.7	44	44
12	45 35.4	45 58.6	46 21.0	46 42.1	47 2.5	47 21.7	47 39.9	47 57.3	48 13.4	48 28.5	49 42.5	50 55.3	49 7.0	48	48
8	44 40.2	45 3.0	46 25.0	47 46.0	48 5.9	46 24.9	46 43.0	47 0.1	47 16.1	47 31.0	47 44.9	47 57.8	48 9.3	52	52
4	43 44.8	44 7.3	45 29.0	46 49.6	47 9.3	45 28.0	46 46.0	47 2.8	46 18.6	46 33.5	46 47.3	47 0.0	47 11.6	56	56
21 0	42 49.3	43 11.5	44 32.8	45 53.1	46 12.6	47 31.1	48 48.8	49 5.5	45 21.2	46 35.9	47 49.7	48 2.3	49 14.0	3 0	0

LATITUDE 16°.															
Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.		
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°			
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	87 0	0	88 0	0	89 0	0	90 0	0	89 0	0	88 0	0	87 0	0	0 0
23 56	86 50	9	87 46	7	88 36	7	89 2	3	88 36	8	87 46	9	86 51	2	4
52	86 25	7	87 13	1	87 49	7	88 4	6	87 50	2	87 13	9	86 26	7	8
48	85 49	5	86 28	7	86 56	5	87 7	0	86 57	3	86 30	2	85 51	2	12
44	85 6	1	85 38	9	86 1	1	86 9	3	86 2	2	85 41	0	85 8	8	16
40	84 18	3	84 46	3	85 4	7	85 11	6	85 6	2	84 49	0	84 22	0	20
36	83 27	7	83 52	2	84 7	9	84 13	9	84 9	7	83 55	4	83 32	3	24
32	82 35	3	82 56	9	83 10	9	83 16	3	83 12	8	83 0	8	82 40	9	28
28	81 41	6	82 1	1	82 13	6	82 18	6	82 15	9	82 5	6	81 48	1	32
24	80 47	1	81 4	8	81 16	3	81 20	9	81 18	8	81 9	8	80 54	6	36
20	79 52	0	80 8	2	80 18	7	80 23	2	80 21	6	80 13	7	80 0	3	40
16	78 56	3	79 11	4	79 21	3	79 25	6	79 24	6	79 17	6	79 5	3	44
12	78 0	2	78 14	4	78 23	7	78 28	0	78 27	3	78 21	2	78 10	2	48
8	77 3	9	77 17	1	77 26	1	77 30	4	77 29	9	77 24	7	77 14	8	52
4	76 7	3	76 20	0	76 28	5	76 32	7	76 32	5	76 27	9	76 19	2	0 56
23 0	75 10	6	75 22	5	75 31	0	75 35	1	75 35	1	75 31	1	75 23	2	1 0
22 56	74 13	7	74 25	1	74 33	3	74 37	6	74 37	9	74 34	3	74 27	2	4
52	73 16	5	73 27	6	73 35	6	73 39	9	73 40	6	73 37	5	73 31	0	8
48	72 19	4	72 30	1	72 38	1	72 42	2	72 43	1	72 40	7	72 34	8	12
44	71 22	3	71 32	7	71 40	3	71 44	6	71 45	7	71 43	7	71 38	7	16
40	70 25	0	70 35	0	70 42	7	70 47	0	70 48	4	70 46	7	70 42	1	20
36	69 27	6	69 37	5	69 45	0	69 49	5	69 51	1	69 49	7	69 45	6	24
32	68 30	2	68 39	9	68 47	3	68 51	9	68 53	7	68 52	7	68 49	1	28
28	67 32	7	67 42	3	67 49	7	67 54	2	67 56	3	67 55	7	67 52	5	32
24	66 35	2	66 44	6	66 52	0	66 56	7	66 58	9	66 58	6	66 56	0	36
20	65 37	7	65 46	9	65 54	3	65 59	1	66 1	6	66 1	6	65 59	4	40
16	64 40	0	64 49	3	64 56	6	65 1	5	65 4	2	65 4	6	65 2	6	44
12	63 42	4	63 51	6	63 58	9	64 3	9	64 6	8	64 7	4	64 6	1	48
8	62 44	9	62 54	0	63 1	2	63 6	4	63 9	4	63 10	5	63 9	4	52
4	61 47	3	61 56	2	62 3	5	62 8	8	62 12	1	62 13	3	62 12	6	1 56
22 0	60 49	6	60 58	6	61 5	9	61 11	4	61 14	7	61 16	2	61 15	9	2 0
21 56	59 52	0	60 0	9	60 8	4	60 13	8	60 17	4	60 19	2	60 19	2	4
52	58 54	3	59 3	3	59 10	8	59 16	2	59 20	1	59 22	1	59 22	4	8
48	57 56	7	58 5	6	58 13	1	58 18	8	58 22	8	58 25	1	58 25	7	12
44	56 59	0	57 8	0	57 15	5	57 21	3	57 25	5	57 28	0	57 29	0	16
40	56 1	3	56 10	3	56 17	9	56 23	9	56 28	2	56 31	0	56 32	3	20
36	55 3	6	55 12	6	55 20	3	55 26	3	55 31	0	55 34	0	55 35	5	24
32	54 5	9	54 15	0	54 22	7	54 29	0	54 33	7	54 37	0	54 38	8	28
28	53 8	3	53 17	3	53 25	3	53 31	6	53 36	5	53 39	9	53 42	1	32
24	52 10	6	52 19	7	52 27	7	52 34	1	52 39	2	52 43	0	52 45	4	36
20	51 12	9	51 22	1	51 30	1	51 36	7	51 42	1	51 46	0	51 48	7	40
16	50 15	4	50 24	5	50 32	6	50 39	4	50 44	9	50 49	1	50 52	0	44
12	49 17	6	49 26	9	49 35	1	49 42	0	49 47	6	49 52	1	49 55	4	48
8	48 19	9	48 29	2	48 37	7	48 44	6	48 50	5	48 55	2	48 58	6	52
4	47 22	3	47 31	6	47 40	1	47 47	4	47 53	4	47 58	2	48 2	0	2 56
21 0	46 24	7	46 34	1	46 42	6	46 50	0	46 56	3	47 1	3	47 5	3	3 0

TRUE ALTITUDE OF BODY.

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LATITUDE 16°.

Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°	
h. m.		°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	
21	0	42	49.3	43	11.5	43	32.8	43	53.1	44	12.6	44	31.1	44	48.8	45	5.5
	56	41	53.7	42	15.4	42	36.5	42	56.5	43	15.8	43	34.1	43	51.6	44	8.2
	52	40	57.8	41	19.3	41	40.1	41	59.9	42	18.9	42	37.0	42	54.4	43	10.8
	48	40	1.9	40	23.1	40	43.7	41	3.2	41	22.0	41	39.9	41	57.1	42	13.4
	44	39	5.9	39	26.8	39	47.1	40	6.4	40	24.9	40	42.7	40	59.8	41	15.8
20	0	38	9.7	38	30.4	38	50.4	39	9.5	39	28.0	39	45.5	40	2.3	40	18.4
	56	37	13.5	37	33.9	37	53.7	38	12.6	38	30.8	38	48.2	39	4.9	39	20.9
	52	36	17.1	36	37.3	36	56.9	37	15.6	37	33.6	37	50.9	38	7.6	38	23.3
	48	35	20.7	35	40.7	35	60.3	36	0.3	36	18.5	36	36.4	36	53.5	37	10.0
	44	34	24.2	34	43.9	35	3.5	35	21.4	35	39.2	35	56.1	36	12.5	36	28.2
19	0	33	27.6	33	47.1	34	6.1	34	24.3	34	41.8	34	58.7	35	15.0	35	30.5
	56	32	31.0	32	50.3	33	9.1	33	27.1	33	44.5	34	1.3	34	17.4	34	32.9
	52	31	34.2	31	53.3	32	11.9	32	29.9	32	47.2	33	3.8	33	19.9	33	35.3
	48	30	37.4	30	56.3	31	14.8	31	32.5	31	49.7	32	6.2	32	22.3	32	37.7
	44	29	40.5	29	59.3	30	17.6	30	35.2	30	52.3	31	8.7	31	24.7	31	40.0
20	0	28	43.6	29	2.2	29	20.4	29	37.8	29	54.8	30	11.2	30	27.1	30	42.4
	56	27	46.6	28	5.0	28	23.0	28	40.4	28	57.3	29	13.6	29	29.5	29	44.8
	52	26	49.6	27	7.9	27	25.7	27	43.0	27	59.8	28	16.0	28	31.8	28	47.0
	48	25	52.5	26	10.6	26	28.4	26	45.5	27	2.2	27	18.4	27	34.2	27	49.4
	44	24	55.4	25	13.3	25	31.0	25	48.1	26	4.7	26	20.8	26	36.5	26	51.7
19	0	23	58.2	24	16.0	24	33.6	24	50.5	25	7.1	25	23.2	25	38.8	25	54.0
	56	23	0.9	23	18.7	23	36.1	23	53.0	24	9.5	24	25.5	24	41.2	24	56.3
	52	22	3.6	22	21.3	22	38.7	22	55.5	23	11.8	23	27.8	23	43.5	23	58.7
	48	21	6.4	21	23.9	21	41.2	21	57.9	22	14.2	22	30.2	22	45.8	23	1.0
	44	20	9.0	20	26.5	20	43.6	21	0.3	21	16.6	21	32.5	21	48.2	22	3.3
20	0	19	11.7	19	29.0	19	46.1	19	63.0	20	7.2	20	19.0	20	34.9	20	50.5
	56	18	14.2	18	31.5	18	48.5	19	5.1	19	21.3	19	37.2	19	52.8	20	8.0
	52	17	16.8	17	33.9	17	50.9	18	7.4	18	23.7	18	39.5	18	55.1	19	10.4
	48	16	19.4	16	36.4	16	53.3	17	9.8	17	26.0	17	41.9	17	57.5	18	12.7
	44	15	21.9	15	38.9	15	55.7	16	12.1	16	28.3	16	44.1	16	59.8	17	15.1
19	0	14	24.4	14	41.3	14	58.1	15	14.5	15	30.6	15	46.5	16	2.1	16	17.5
	56	13	26.9	13	43.8	14	0.5	14	16.8	14	33.0	14	48.8	15	4.5	15	19.9
	52	12	29.3	12	46.1	13	2.7	13	19.1	13	35.3	13	51.1	14	6.8	14	22.3
	48	11	31.7	11	48.5	12	5.2	12	21.5	12	37.6	12	53.5	13	9.3	13	24.7
	44	10	34.1	10	50.9	11	7.5	11	23.8	11	39.9	11	55.9	12	11.6	12	27.2
20	0	9	36.5	9	53.2	10	9.8	10	26.1	10	42.3	10	58.2	11	14.1	11	29.6
	56	8	38.9	8	55.6	9	12.1	9	28.4	9	44.6	10	0.6	10	16.5	10	32.1
	52	7	41.3	7	57.9	8	14.5	8	30.8	8	47.0	9	2.9	9	18.9	9	34.7
	48	6	43.6	7	0.2	7	16.8	7	33.1	7	49.3	8	5.4	8	21.3	8	37.2
	44	5	46.0	6	2.6	6	19.1	6	35.4	6	51.7	7	7.8	7	23.8	7	39.7
19	0	4	48.4	5	4.9	5	21.4	5	37.7	5	54.0	6	10.2	6	26.3	6	42.3
	56	3	50.7	4	7.2	4	23.8	4	40.1	4	56.4	5	12.6	5	28.8	5	44.9
	52	2	53.0	3	9.6	3	26.1	3	42.5	3	58.8	4	15.1	4	31.3	4	47.5
	48	1	55.4	2	11.9	2	28.5	2	44.8	3	1.2	3	17.6	3	33.9	3	50.1
	44	0	57.6	1	14.2	1	30.8	1	47.2	2	3.7	2	20.0	2	36.4	2	52.8
18	0	0	0.0	0	16.6	0	33.1	0	49.6	1	6.1	1	22.6	1	39.1	1	55.5

TRUE ALTITUDE OF BODY.

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LATITUDE 16°.																	
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.			
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°				
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	46	24.7	46	34.1	46	42.6	46	50.0	46	56.3	47	1.3	47	5.3	47	8.3
20	56	45	27.0	45	36.6	45	45.3	45	52.7	45	59.1	46	4.4	46	8.7	46	12.0
	52	44	29.4	44	39.0	44	47.8	44	55.4	45	2.0	45	7.5	45	12.1	45	15.7
	48	43	31.8	43	41.5	43	50.4	43	58.2	44	4.9	44	10.7	44	15.5	44	19.4
	44	42	34.2	42	44.0	42	53.0	43	0.9	43	7.9	43	13.9	43	18.9	43	23.1
	40	41	36.6	41	46.5	41	55.6	42	3.7	42	10.9	42	17.1	42	22.4	42	26.8
36	36	40	39.1	40	49.0	40	58.3	41	6.5	41	13.9	41	20.3	41	25.9	41	30.5
	32	39	41.5	39	51.6	40	0.9	40	9.4	40	16.9	40	23.6	40	29.3	40	34.3
	28	38	44.0	38	54.1	39	3.7	39	12.2	39	20.0	39	26.8	39	32.8	39	38.1
	24	37	46.4	37	56.7	38	6.3	38	15.1	38	23.0	38	30.1	38	36.4	38	41.9
	20	36	48.9	36	59.3	37	9.1	37	17.9	37	26.1	37	33.4	37	39.9	37	45.8
16	16	35	51.4	36	1.9	36	11.8	36	20.9	36	29.2	36	36.8	36	43.6	36	49.6
	12	34	54.0	35	4.5	35	14.6	35	23.8	35	32.4	35	40.1	35	47.2	35	53.5
	8	33	56.4	34	7.2	34	17.4	34	26.8	34	35.5	34	43.5	34	50.7	34	57.4
	4	32	59.1	33	9.9	33	20.3	33	29.8	33	38.7	33	46.9	33	54.4	34	1.3
	0	32	1.6	32	12.6	32	23.1	32	32.8	32	41.9	32	50.3	32	58.1	33	5.3
19	56	31	4.2	31	15.3	31	26.0	31	35.9	31	45.2	31	53.8	32	1.8	32	9.3
	52	30	6.9	30	18.1	30	28.9	30	39.0	30	48.4	30	57.3	31	5.6	31	13.3
	48	29	9.5	29	20.9	29	31.8	29	42.1	29	51.8	30	0.8	30	9.4	30	17.3
	44	28	12.2	28	23.7	28	34.8	28	45.2	28	55.1	29	4.4	29	13.1	29	21.5
	40	27	14.9	27	26.5	27	37.8	27	48.4	27	58.5	28	8.0	28	17.1	28	25.5
36	36	26	17.6	26	29.4	26	40.8	26	51.6	27	1.9	27	11.7	27	20.9	27	29.8
	32	25	20.4	25	32.2	25	43.9	25	54.8	26	5.4	26	15.4	26	24.9	26	33.9
	28	24	23.1	24	35.2	24	46.9	24	58.1	25	8.8	25	19.1	25	28.8	25	38.2
	24	23	25.9	23	38.1	23	50.1	24	1.5	24	12.4	24	22.8	24	32.8	24	42.5
	20	22	28.8	22	41.1	22	53.2	23	4.8	23	15.9	23	26.6	23	36.9	23	46.8
16	16	21	31.7	21	44.2	21	56.4	22	8.2	22	19.5	22	30.5	22	41.0	22	51.1
	12	20	34.5	20	47.2	20	59.6	21	11.6	21	23.2	21	34.4	21	45.1	21	55.6
	8	19	37.5	19	50.3	20	2.9	20	15.1	20	26.9	20	38.3	20	49.3	21	0.0
	4	18	40.4	18	53.4	19	6.2	19	18.6	19	30.6	19	42.2	19	53.6	20	4.5
	0	17	43.4	17	56.6	18	9.6	18	22.1	18	34.4	18	46.3	18	57.8	19	9.1
19	56	16	46.5	16	59.8	17	13.0	17	25.8	17	38.2	17	50.3	18	2.1	18	13.7
	52	15	49.5	16	3.0	16	16.4	16	29.4	16	42.1	16	54.4	17	6.6	17	18.4
	48	14	52.6	15	6.3	15	19.9	15	33.0	15	46.0	15	58.6	16	11.0	16	23.1
	44	13	55.8	14	9.6	14	23.4	14	36.8	14	49.9	15	2.9	15	15.4	15	27.9
	40	12	59.0	13	13.0	13	26.9	13	40.6	13	54.0	14	7.1	14	20.0	14	32.7
36	36	12	2.2	12	16.4	12	30.6	12	44.4	12	58.0	13	11.4	13	24.6	13	37.6
	32	11	5.4	11	19.9	11	34.3	11	48.3	12	2.2	12	15.8	12	29.2	12	42.5
	28	10	8.7	10	23.4	10	38.0	10	52.3	11	6.3	11	20.2	11	33.9	11	47.5
	24	9	12.1	9	26.9	9	41.7	9	56.2	10	10.6	10	24.8	10	38.7	10	52.6
	20	8	15.5	8	30.5	8	45.6	9	0.3	9	14.9	9	29.3	9	43.6	9	57.7
16	16	7	19.0	7	34.2	7	49.4	8	4.4	8	19.2	8	33.9	8	48.5	9	3.0
	12	6	22.5	6	37.9	6	53.3	7	8.5	7	23.7	7	38.6	7	53.5	8	8.3
	8	5	26.0	5	41.7	5	57.3	6	12.8	6	28.1	6	43.4	6	58.5	7	13.7
	4	4	29.7	4	45.5	5	1.4	5	17.1	5	32.7	5	48.2	6	3.7	6	19.1
	0	3	33.3	3	49.4	4	5.5	4	21.4	4	37.3	4	53.2	5	8.9	5	24.6
18	56	3	46.5	3	59.8	4	13.0	4	25.8	4	38.2	4	50.3	5	2.1	5	13.7
	52	2	49.5	3	3.0	3	16.4	3	29.4	3	42.1	3	54.4	4	6.6	4	18.4
	48	1	52.6	2	6.3	2	19.9	2	33.0	2	46.0	2	58.6	3	11.0	3	23.1
	44	0	55.8	1	9.6	1	23.4	1	36.8	1	49.9	2	2.9	2	15.4	2	27.9
	40	0	59.0	1	13.0	1	26.9	1	40.6	1	54.0	2	7.1	2	20.0	2	32.7
36	36	0	2.2	1	16.4	1	30.6	1	44.4	1	58.0	2	11.4	2	24.6	2	37.6
	32	0	5.4	1	19.9	1	34.3	1	48.3	2	2.2	2	15.8	2	29.2	2	42.5
	28	0	8.7	1	23.4	1	38.0	1	52.3	2	6.3	2	20.2	2	33.9	2	47.5
	24	0	12.1	1	26.9	1	41.7	1	56.2	2	10.6	2	24.8	2	38.7	2	52.6
	20	0	15.5	1	30.5	1	45.6	2	0.3	2	14.9	2	29.3	2	43.6	2	57.7
16	16	0	19.0	1	34.2	1	49.4	2	4.4	2	19.2	2	33.9	2	48.5	3	3.0
	12	0	22.5	1	37.9	1	53.3	2	8.5	2	23.7	2	38.6	2	53.5	3	8.3
	8	0	26.0	1	41.7	1	57.3	2	12.8	2	28.1	2	43.4	2	58.5	3	13.7
	4	0	29.7	1	45.5	2	1.4	2	17.1	2	32.7	2	48.2	3	3.7	3	19.1
	0	3	33.3	3	49.4	4	5.5	4	21.4	4	37.3	4	53.2	5	8.9	5	24.6
18	56	3	46.5	3	59.8	4	13.0	4	25.8	4	38.2	4	50.3	5	2.1	5	13.7
	52	2	49.5	3	3.0	3	16.4	3	29.4	3	42.1	3	54.4	4	6.6	4	18.4
	48	1	52.6	2	6.3	2	19.9	2	33.0	2	46.0	2	58.6	3	11.0	3	23.1
	44	0	55.8	1	9.6	1	23.4	1	36.8	1	49.9	2	2.9	2	15.4	2	27.9
	40	0	59.0	1	13.0	1	26.9	1	40.6	1	54.0	2	7.1	2	20.0	2	32.7
36	36	0	2.2	1	16.4	1	30.6	1	44.4	1	58.0	2	11.4	2	24.6	2	37.6
	32	0	5.4	1	19.9	1	34.3	1	48.3	2	2.2	2	15.8	2	29.2	2	42.5
	28	0	8.7	1	23.4	1	38.0	1	52.3	2	6.3	2	20.2	2	33.9	2	47.5
	24	0	12.1	1	26.9	1	41.7	1	56.2	2	10.6	2	24.8	2	38.7	2	52.6
	20	0	15.5	1	30.5	1	45.6	2	0.3	2	14.9	2	29.3	2	43.6	2	57.7
16	16	0	19.0	1	34.2	1	49.4	2	4.4	2	19.2	2	33.9	2	48.5	3	3.0
	12	0	22.5	1	37.9	1	53.3	2	8.5	2	23.7	2	38.6	2	53.5	3	8.3
	8	0	26.0	1	41.7	1	57.3	2	12.8	2	28.1	2	43.4	2	58.5	3	13.7
	4	0	29.7	1	45.5	2	1.4	2	17.1	2	32.7	2	48.2	3	3.7	3	19.1
	0	3	33.3	3	49.4	4	5.5	4	21.4	4	37.3	4	53.2	5	8.9	5	24.6
18	56	3	46.5	3	59.8	4	13.0	4	25.8	4	38.2	4	50.3	5	2.1	5	13.7
	52	2	49.5	3	3.0	3	16.4	3	29.4	3	42.1	3	54.4	4	6.6	4	18.4
	48	1	52.6	2	6.3	2	19.9	2	33.0	2	46.0	2	58.6	3	11.0	3	23.1
	44	0	55.8	1	9.6	1	23.4	1	36.8	1	49.9	2	2.9	2	15.4	2	27.9
	40	0	59.0	1	13.0	1	26.9	1	40.6	1	54.0	2	7.1	2	20.0	2	32.7
36	36	0	2.2	1	16.4	1	30.6	1	44.4	1	58.0	2	11.4	2	24.6	2	37.6
	32	0	5.4	1	19.9	1	34.3	1	48.3	2	2.2	2	15.8	2	29.2	2	42.5
	28	0	8.7	1	23.4	1	38.0	1	52.3	2	6.3	2	20.2	2	33.9	2	47.5
	24	0	12.1	1	26.9	1	41.7	1	56.2	2	10.6	2	24.8	2	38.7	2	52.6
	20	0	15.5	1	30.5	1	45.6	2	0.3	2	14.9	2	29.3	2	43.6	2	57.7
16	16	0	19.0	1	34.2	1	49.4	2	4.4	2	19.2	2	33.9	2	48.5	3	3.0
	12	0	22.5	1	37.9	1	53.3	2	8.5	2	23.7	2	38.6	2	53.5	3	8.3
	8	0	26.0	1	41.7	1	57.3	2	12.8	2	28.1	2	43.4	2	58.5	3	13.7
	4	0	29.7	1	45.5	2	1.4	2	17.1								

LATITUDE 16°.														
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.													Westerly Hour Angle.
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	h. m.
24 0	74 0	0	73 0	0	72 0	0	71 0	0	70 0	0	69 0	0	68 0	0 0
23 56	73 58	2	72 58	2	71 58	4	70 58	4	69 58	6	68 58	6	67 58	4
52	73 52	7	72 53	0	71 53	5	70 53	8	69 54	1	68 54	3	67 54	8
48	73 43	7	72 44	4	71 45	5	70 46	2	69 46	9	68 47	3	67 48	12
44	73 31	2	72 32	8	71 34	4	70 35	6	69 36	9	68 37	6	67 38	16
40	73 15	4	72 17	8	71 20	2	70 22	1	69 23	9	68 25	4	67 26	20
36	72 56	4	71 59	8	71 3	2	70 5	9	69 8	2	68 10	5	67 12	24
32	72 34	4	71 38	9	70 43	3	69 46	8	68 50	1	67 53	0	66 56	28
28	72 9	5	71 15	2	70 20	6	69 25	3	68 29	5	67 33	3	66 37	32
24	71 42	0	70 49	0	69 55	5	69 1	3	68 6	5	67 11	3	66 15	36
20	71 12	1	70 20	3	69 27	9	68 34	9	67 41	3	66 47	0	65 52	40
16	70 39	9	69 49	5	68 58	6	68 6	5	67 13	8	66 20	6	65 27	44
12	70 5	7	69 16	5	68 26	9	67 36	0	66 44	5	65 52	3	64 59	48
8	69 29	5	68 41	8	67 53	3	67 3	7	66 13	3	65 22	3	64 30	52
4	68 51	6	68 5	1	67 18	0	66 29	6	65 40	4	64 50	4	63 59	56
23 0	68 12	2	67 27	0	66 41	1	65 53	9	65 5	8	64 16	8	63 27	1 0
22 56	67 31	3	66 47	5	66 2	8	65 16	7	64 29	6	63 41	9	62 53	4
52	66 49	1	66 6	4	65 22	8	64 38	0	63 52	1	63 5	4	62 18	8
48	66 5	7	65 24	2	64 41	7	63 58	0	63 13	6	62 27	7	61 41	12
44	65 21	2	64 40	8	63 59	6	63 16	8	62 33	3	61 48	7	61 3	16
40	64 35	6	63 56	5	63 16	2	62 34	7	61 52	1	61 8	4	60 24	20
36	63 49	2	63 11	0	62 31	8	61 51	4	61 9	8	60 27	2	59 44	24
32	63 2	0	62 24	9	61 46	6	61 7	2	60 26	6	59 45	0	59 2	28
28	62 14	0	61 37	8	61 0	5	60 22	0	59 42	5	59 1	9	58 20	32
24	61 25	2	60 50	0	60 13	8	59 36	2	58 57	5	58 17	8	57 32	36
20	60 35	9	60 1	6	59 26	3	58 49	5	58 11	7	57 32	8	56 53	40
16	59 46	0	59 12	5	58 38	0	58 2	1	57 25	1	56 47	3	56 8	44
12	58 55	5	58 22	9	57 49	1	57 14	0	56 38	1	56 0	9	55 28	48
8	58 4	5	57 32	6	56 59	7	56 25	5	55 50	3	55 14	0	54 36	52
4	57 13	1	56 41	9	56 9	8	55 36	4	55 1	9	54 26	4	53 50	56
22 0	56 21	2	55 50	7	55 19	4	54 46	7	54 12	9	53 38	2	53 2	2 0
21 56	55 29	0	54 59	2	54 28	5	53 56	5	53 23	5	52 49	5	52 14	4
52	54 36	4	54 7	2	53 37	1	53 5	9	52 33	6	52 0	3	51 26	8
48	53 43	5	53 14	9	52 45	5	52 14	8	51 43	2	51 10	7	50 37	12
44	52 50	2	52 22	5	51 53	5	51 23	4	50 52	4	50 20	4	49 47	16
40	51 56	7	51 29	3	51 1	5	50 31	7	50 1	2	49 29	9	48 57	20
36	51 2	9	50 36	0	50 8	4	49 39	4	49 7	4	48 39	0	48 7	24
32	50 8	9	49 42	5	49 15	3	48 47	0	48 17	8	47 47	7	47 16	28
28	49 14	6	48 48	7	48 22	1	47 54	3	47 25	6	46 56	0	46 25	32
24	48 20	1	47 54	7	47 28	5	47 1	2	46 33	1	46 4	1	45 34	36
20	47 25	4	47 0	4	46 34	8	46 7	9	46 40	3	45 11	8	44 42	40
16	46 30	5	46 6	0	45 40	7	45 14	5	44 47	2	44 19	3	43 50	44
12	45 35	4	45 11	3	44 46	5	44 20	6	43 54	0	43 26	4	42 58	48
8	44 40	2	44 16	5	43 52	0	43 26	7	43 0	4	42 33	4	42 5	52
4	43 44	8	43 21	4	42 57	3	42 32	4	42 6	4	41 40	0	41 12	56
21 0	42 49	3	42 26	3	42 2	6	41 38	0	41 12	7	40 46	5	40 19	3 0

		LATITUDE 16°.													
Westerly		DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly	
Hour														Hour	
Angle.		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Angle.	
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	61	0	60	0	59	0	58	0	57	0	56	0	55	0
23	56	60	59	1	59	59	0	58	59	1	57	59	1	56	59
	52	60	55	9	59	56	1	58	56	3	57	56	5	56	56
	48	60	50	9	59	51	2	58	51	6	57	51	9	56	52
	44	60	44	0	59	44	4	58	45	0	57	45	5	56	45
	40	60	35	0	59	35	8	58	36	6	57	37	4	56	38
	36	60	24	0	59	25	1	58	26	3	57	27	4	56	28
	32	60	11	2	59	12	8	58	14	4	57	15	9	56	17
	28	59	56	5	58	58	5	58	0	7	57	2	5	56	4
	24	59	39	9	58	42	6	57	45	1	56	47	5	55	49
	20	59	21	7	58	24	8	57	28	0	56	30	8	55	33
	16	59	1	6	58	5	4	57	9	2	56	12	6	55	15
	12	58	40	0	57	44	4	56	48	8	55	52	8	54	56
	8	58	16	8	57	21	9	56	26	9	55	31	5	54	35
	4	57	52	0	56	57	9	56	8	5	55	8	6	54	13
23	0	57	25	6	56	32	2	55	38	6	54	44	6	53	50
22	56	56	57	9	56	5	1	55	12	4	54	19	1	53	25
	52	56	28	8	55	36	9	54	44	7	53	52	2	52	59
	48	55	58	5	55	7	3	54	15	9	53	24	0	52	31
	44	55	26	8	54	36	5	53	45	8	52	51	7	52	3
	40	54	54	0	54	4	4	53	14	5	52	24	2	51	33
	36	54	20	0	53	31	3	52	42	2	51	52	6	51	2
	32	53	44	9	52	57	0	52	8	7	51	19	9	50	30
	28	53	8	8	52	21	7	51	34	3	50	46	1	49	57
	24	52	31	7	51	45	4	50	58	7	50	11	4	49	23
	20	51	53	7	51	8	1	50	22	2	49	35	8	48	48
	16	51	14	7	50	30	0	49	44	9	48	59	1	48	12
	12	50	35	0	49	51	0	49	6	7	48	21	6	47	36
	8	49	54	4	49	11	2	48	27	6	47	43	4	46	58
	4	49	13	0	48	30	6	47	47	7	47	4	2	46	20
22	0	48	31	0	47	49	3	47	7	2	46	24	5	45	41
21	56	47	48	2	47	7	3	46	25	9	45	43	9	45	1
	52	47	4	8	46	24	6	45	44	0	45	2	6	44	20
	48	46	20	8	45	41	3	45	1	3	44	21	7	43	39
	44	45	36	1	44	57	3	44	18	1	43	38	2	42	57
	40	44	50	9	44	12	8	43	31	3	42	55	1	42	15
	36	44	5	2	43	27	8	42	49	9	42	11	3	41	32
	32	43	18	9	42	42	3	42	4	9	41	27	1	40	48
	28	42	32	2	41	56	1	41	19	6	40	42	3	40	4
	24	41	45	0	41	9	6	40	33	7	39	57	1	39	19
	20	40	57	5	40	22	6	39	47	3	39	11	3	38	34
	16	40	9	5	39	35	2	39	0	4	38	25	1	37	49
	12	39	21	0	38	47	3	38	13	2	37	38	5	37	2
	8	38	32	1	37	59	1	37	25	6	36	51	4	36	16
	4	37	43	0	37	10	5	36	37	5	36	4	0	35	29
21	0	36	53	5	36	21	5	35	49	1	35	16	2	34	42

LATITUDE 16°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
15 0	21 0	42 49.3	42 26.3	42 2.6	41 38.0	41 12.7	40 46.5	40 19.7	39 52.2	39 24.0	38 55.2	38 25.6	37 55.5	37 24.8	3 0	9 0	
4	20 56	41 53.7	41 31.0	41 7.7	40 43.4	40 18.5	39 52.8	39 26.4	38 59.3	38 31.6	38 3.2	37 34.2	37 4.6	36 34.4	4	8 56	
8	52	40 57.8	40 35.5	40 12.5	39 48.7	39 24.1	38 58.8	38 32.9	38 6.3	37 39.0	37 11.1	36 42.5	36 13.5	35 43.7	8	52	
12	48	40 1.9	39 39.8	39 17.3	38 53.7	38 29.5	38 4.7	37 39.1	37 12.9	36 46.1	36 18.6	35 50.6	35 22.0	34 52.8	12	48	
16	44	39 5.9	38 44.1	38 21.9	37 58.7	37 34.8	37 10.3	36 45.2	36 19.4	35 53.0	35 26.0	34 58.4	34 30.3	34 1.5	16	44	
20	40	38 9.7	37 48.3	37 26.3	37 3.5	36 40.0	36 15.8	35 51.1	35 25.7	34 59.7	34 33.1	34 6.0	33 38.3	33 10.0	20	40	
24	36	37 13.5	36 52.3	36 30.6	36 8.1	35 45.0	35 21.1	34 56.7	34 31.8	34 6.2	33 40.1	33 13.3	32 46.1	32 18.2	24	36	
28	32	36 17.1	35 56.2	35 34.8	35 12.6	34 49.7	34 26.3	34 2.4	33 37.7	33 12.5	32 46.8	32 20.4	31 53.6	31 26.2	28	32	
32	28	35 20.7	35 0.1	34 38.9	34 17.0	33 54.5	33 31.3	33 7.7	32 43.5	32 18.6	31 53.2	31 27.3	31 1.0	30 34.0	32	28	
36	24	34 24.2	34 3.8	33 42.9	33 21.3	32 59.0	32 36.2	32 12.9	31 49.0	31 24.6	30 59.5	30 34.1	30 8.1	29 41.6	36	24	
40	20	33 27.6	33 7.4	32 46.8	32 25.4	32 3.5	31 41.0	31 18.0	30 54.4	30 30.3	30 5.7	29 40.6	29 15.1	28 49.0	40	20	
44	16	32 31.0	32 11.0	31 50.7	31 29.5	31 7.8	30 45.6	30 22.9	29 59.7	29 35.9	29 11.7	28 47.0	28 21.8	27 56.1	44	16	
48	12	31 34.2	31 14.5	30 54.3	30 33.5	30 12.1	29 50.1	29 27.8	29 4.8	28 41.4	28 17.5	27 53.2	27 28.4	27 3.0	48	12	
52	8	30 37.4	30 17.8	29 57.9	29 37.3	29 16.2	28 54.5	28 32.4	28 9.8	27 46.7	27 23.2	26 59.2	26 34.8	26 9.9	52	8	
15 56	4	29 40.5	29 21.2	29 1.5	28 41.0	28 20.2	27 58.8	27 37.0	27 14.7	26 51.9	26 28.7	26 5.0	25 41.0	25 16.5	3 56	4	
16 0	20 0	28 43.6	28 24.5	28 4.9	27 44.7	27 24.1	27 3.0	26 41.5	26 19.5	25 57.0	25 34.1	25 10.8	24 47.0	24 22.9	4 0	8 0	
4	19 56	27 46.6	27 27.6	27 8.3	26 48.4	26 27.9	26 7.0	25 45.8	25 24.1	25 1.9	24 39.3	24 16.3	23 53.0	23 29.2	4	7 56	
8	52	26 49.6	26 30.8	26 11.6	25 51.9	25 31.7	25 11.0	24 50.0	24 28.6	24 6.7	23 44.4	23 21.7	22 58.8	22 35.3	8	52	
12	48	25 52.5	25 33.8	25 14.9	24 55.4	24 35.4	24 15.0	23 54.2	23 33.0	23 11.4	22 49.4	22 27.1	22 4.4	21 41.3	12	48	
16	44	24 55.4	24 36.8	24 18.1	23 58.7	23 39.0	23 18.7	22 58.3	22 37.3	22 16.0	21 54.3	21 32.3	21 9.9	20 47.1	16	44	
20	40	23 58.2	23 39.8	23 21.2	23 2.0	22 42.5	22 22.5	22 2.2	21 41.5	21 20.5	20 59.0	20 37.4	20 15.3	19 52.8	20	40	
24	36	23 0.9	22 42.7	22 24.3	22 5.3	21 45.9	21 26.1	21 6.1	20 45.6	20 24.9	20 3.7	19 42.3	19 20.5	18 58.4	24	36	
28	32	22 3.6	21 45.6	21 27.3	21 8.5	20 49.2	20 29.7	20 9.9	19 49.7	19 29.1	19 8.3	18 47.1	18 25.6	18 3.9	28	32	
32	28	21 6.4	20 48.4	20 30.3	20 11.6	19 52.6	19 33.2	19 13.6	18 53.6	18 33.4	18 12.7	17 51.9	17 30.6	17 9.1	32	28	
36	24	20 9.0	19 51.2	19 33.2	19 14.6	18 55.8	18 36.6	18 17.2	17 57.5	17 37.4	17 17.1	16 56.4	16 35.6	16 14.3	36	24	
40	20	19 11.7	18 53.9	18 36.0	18 17.6	17 59.0	17 40.0	17 20.8	17 1.3	16 41.4	16 21.4	16 1.0	15 40.3	15 19.5	40	20	
44	16	18 14.2	17 56.6	17 38.9	17 20.6	17 2.1	16 43.3	16 24.3	16 4.9	15 45.4	15 25.5	15 5.4	14 45.0	14 24.4	44	16	
48	12	17 16.8	16 59.3	16 41.7	16 23.6	16 5.2	15 46.6	15 27.7	15 8.6	14 49.2	14 29.5	14 9.7	13 49.6	13 29.3	48	12	
52	8	16 19.4	16 1.9	15 44.4	15 26.5	15 8.2	14 49.8	14 31.1	14 12.1	13 52.9	13 33.6	13 13.9	12 54.1	12 34.1	52	8	
16 56	4	15 21.9	15 4.6	14 47.1	14 29.3	14 11.2	13 52.9	13 34.4	13 15.6	12 56.7	12 37.5	12 18.1	11 58.6	11 38.7	4 56	4	
17 0	19 0	14 24.4	14 7.1	13 49.8	13 32.1	13 14.1	12 56.0	12 37.6	12 19.1	12 0.3	11 41.3	11 22.2	11 2.9	10 43.3	5 0	7 0	
4	18 56	13 26.9	13 9.7	12 52.5	12 34.8	12 17.0	11 58.9	11 40.9	11 22.4	11 3.9	10 45.1	10 26.2	10 7.1	9 47.8	4	6 56	
8	52	12 29.3	12 12.2	11 55.1	11 37.6	11 19.8	11 2.0	10 43.9	10 25.8	10 7.4	9 48.8	9 30.1	9 11.3	8 52.2	8	52	
12	48	11 31.7	11 14.7	10 57.7	10 40.2	10 22.7	10 4.9	9 47.1	9 29.0	9 10.8	8 52.4	8 34.0	8 15.4	7 56.6	12	48	
16	44	10 34.1	10 17.2	10 0.2	9 42.9	9 25.4	9 7.8	8 50.1	8 32.2	8 14.2	7 56.0	7 37.8	7 19.4	7 0.8	16	44	
20	40	9 36.5	9 19.6	9 2.7	8 45.5	8 28.2	8 10.7	7 53.1	7 35.3	7 17.5	6 59.5	6 41.5	6 23.3	6 5.0	20	40	
24	36	8 38.9	8 22.1	8 5.2	7 48.1	7 30.9	7 13.5	6 56.1	6 38.5	6 20.8	6 3.0	5 45.1	5 27.2	5 9.1	24	36	
28	32	7 41.3	7 24.5	7 7.7	6 50.7	6 33.6	6 16.3	5 59.0	5 41.6	5 24.0	5 6.4	4 48.7	4 30.9	4 13.1	28	32	
32	28	6 43.6	6 26.9	6 10.2	5 53.2	5 36.2	5 19.0	5 1.8	4 44.6	4 27.2	4 9.7	3 52.2	3 34.7	3 17.0	32	28	
36	24	5 46.0	5 29.3	5 12.7	4 55.7	4 38.8	4 21.7	4 4.7	3 47.5	3 30.3	3 13.0	2 55.7	2 38.3	2 20.9	36	24	
40	20	4 48.4	4 31.7	4 15.0	3 58.2	3 41.3	3 24.4	3 7.5	2 50.5	2 33.4	2 16.2	1 59.1	1 41.9	1 24.7	40	20	
44	16	3 50.7	3 34.0	3 17.5	3 0.7	2 43.9	2 27.0	2 10.2	1 53.3	1 36.4	1 19.4	1 2.5	0 45.5	0 28.5	44	16	
48	12	2 53.0	2 36.4	2 19.9	2 3.2	1 46.4	1 29.7	1 12.9	0 56.1	0 39.4	0 22.6	0 5.8	0 11.0	0 27.8	48	12	
52	8	1 55.4	1 38.8	1 22.3	1 5.6	0 49.0	0 32.2	0 15.6	0 1.1	0 17.7	0 34.3	0 51.0	1 7.6	1 24.2	52	8	
17 56	4	0 57.6	0 41.1	0 24.6	0 8.1	0 8.6	0 25.2	0 41.7	0 58.3	1 14.8	1 31.3	1 47.8	2 4.2	2 20.7	5 56	4	
18 0	18 0	0 0.0	0 16.6	0 33.1	0 49.6	1 6.1	1 22.6	1 39.1	1 55.5	2 11.9	2 28.2	2 44.6	3 0.9	3 17.1	6 0	6 0	

LATITUDE 16°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
		Declination		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
Same Name.	Contrary Name.															Contrary Name.	Same Name.
h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	h. m.
15 0	21 0	36	53.5	36	21.5	35	49.1	35	16.2	34	42.6	34	8.6	33	34.1	32	59.3
4	20 56	36	3.6	35	32.2	35	0.4	34	27.9	33	55.0	33	21.6	32	47.6	31	38.6
8	52	35	13.5	34	42.6	34	11.3	33	39.4	33	6.9	32	34.1	32	0.8	31	27.1
12	48	34	23.0	33	52.6	33	21.8	32	50.5	32	18.6	31	46.3	31	13.6	30	40.5
16	44	33	32.2	33	2.4	32	32.1	32	1.3	31	30.0	30	58.2	29	53.5	29	20.3
20	40	32	41.2	32	11.9	31	42.1	31	11.8	30	41.0	30	9.8	29	38.1	29	6.1
24	36	31	50.0	31	21.1	30	51.8	30	22.0	29	51.7	29	21.0	28	49.9	28	18.4
28	32	30	58.4	30	30.1	30	1.3	29	32.0	29	2.2	28	32.0	28	1.3	27	30.4
32	28	30	6.7	29	38.7	29	10.5	28	41.6	28	12.3	27	42.6	27	12.5	26	42.1
36	24	29	14.7	28	47.2	28	19.3	27	51.0	27	22.2	26	53.0	26	23.4	25	53.5
40	20	28	22.5	27	55.4	27	28.1	27	0.1	26	31.9	26	3.1	25	34.0	25	4.7
44	16	27	30.0	27	3.4	26	36.5	26	9.1	25	41.2	25	13.0	24	44.4	24	15.5
48	12	26	37.4	26	11.2	25	44.7	25	17.7	24	50.4	24	22.6	23	54.5	23	26.1
52	8	25	44.5	25	18.8	24	52.7	24	26.2	23	59.3	23	32.0	23	4.3	22	36.5
15 56	4	24	51.6	24	26.2	24	0.6	23	34.5	23	8.0	22	41.1	22	14.0	21	46.5
16 0	20 0	23	58.4	23	33.5	23	8.2	22	42.5	22	16.5	21	50.1	21	23.4	20	56.4
4	19 56	23	5.0	22	40.5	22	15.7	21	50.3	21	24.8	20	58.8	20	32.5	20	6.0
8	52	22	11.6	21	47.3	21	22.9	20	58.0	20	32.8	20	7.3	19	41.5	19	15.4
12	48	21	17.9	20	54.0	20	30.0	20	5.5	19	40.7	19	15.6	18	50.2	18	24.6
16	44	20	24.1	20	0.6	19	36.9	19	12.8	18	48.4	18	23.8	17	58.7	17	33.7
20	40	19	30.1	19	7.0	18	43.7	18	20.0	17	56.0	17	31.7	17	7.2	16	42.4
24	36	18	36.0	18	13.2	17	50.3	17	27.0	17	3.3	16	39.5	16	15.4	15	51.1
28	32	17	41.8	17	19.3	16	56.7	16	33.8	16	10.6	15	47.1	15	23.4	14	59.5
32	28	16	47.4	16	25.3	16	3.0	15	40.5	15	17.6	14	54.6	14	31.2	14	7.8
36	24	15	52.9	15	31.1	15	9.3	14	47.0	14	24.5	14	1.9	13	38.9	13	15.9
40	20	14	58.3	14	36.9	14	15.3	13	53.5	13	31.3	13	9.0	12	46.4	12	23.8
44	16	14	3.6	13	42.5	13	21.2	12	59.7	12	37.9	12	16.0	11	53.8	11	31.6
48	12	13	8.7	12	48.0	12	27.0	12	5.8	11	44.4	11	22.8	11	1.1	10	39.2
52	8	12	13.8	11	53.3	11	32.7	11	11.9	10	50.8	10	29.6	10	8.2	9	46.7
16 56	4	11	18.8	10	58.6	10	38.2	10	17.7	9	57.0	9	36.1	9	15.1	8	54.0
17 0	19 0	10	23.6	10	3.7	9	43.7	9	23.5	9	3.2	8	42.6	8	21.9	8	1.2
4	18 56	9	28.4	9	8.8	8	49.1	8	29.2	8	9.1	7	49.0	7	28.6	7	8.3
8	52	8	33.1	8	13.8	7	54.3	7	34.8	7	15.0	6	55.2	6	35.2	6	15.3
12	48	7	37.7	7	18.6	6	59.5	6	40.2	6	20.8	6	1.3	5	41.7	5	22.1
16	44	6	42.2	6	23.3	6	4.5	5	45.5	5	26.4	5	7.3	4	48.0	4	28.8
20	40	5	46.6	5	28.0	5	9.5	4	50.8	4	32.0	4	13.1	3	54.3	3	35.3
24	36	4	50.9	4	32.6	4	14.3	3	55.9	3	37.4	3	19.0	3	0.3	2	41.8
28	32	3	55.1	3	37.1	3	19.1	3	1.0	2	42.8	2	24.6	2	6.3	1	48.1
32	28	2	59.3	2	41.6	2	23.8	2	6.0	1	48.1	1	30.2	1	12.2	0	54.4
36	24	2	3.4	1	45.9	1	28.5	1	10.9	0	53.3	0	35.7	0	18.0	0	0.5
40	20	1	7.5	0	50.2	0	33.0	0	15.7	0	1.6	0	18.9	0	36.2	0	53.4
44	16	0	11.5	0	5.6	0	22.6	0	39.6	0	56.6	1	13.6	1	30.6	1	47.4
48	12	0	44.6	1	1.5	1	18.2	1	35.0	1	51.7	2	8.4	2	25.0	2	41.6
52	8	1	40.8	1	57.4	2	13.9	2	30.4	2	46.9	3	3.2	3	19.6	3	35.8
17 56	4	2	37.0	2	53.4	3	9.6	3	25.9	3	42.1	3	58.2	4	14.2	4	30.1
18 0	18 0	3	33.3	3	49.4	4	5.5	4	21.5	4	37.3	4	53.2	5	9.0	5	24.6

LATITUDE 17°.														
Westerly Hour Angle.	DECLINATION — <i>same Name as</i> — LATITUDE.													We E A
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h
24 0	73 0 0	74 0 0	75 0 0	76 0 0	77 0 0	78 0 0	79 0 0	80 0 0	81 0 0	82 0 0	83 0 0	84 0 0	85 0 0	0
23 56	72 58.3	73 58.2	74 58.1	75 57.9	76 57.8	77 57.6	78 57.4	79 57.1	80 56.8	81 56.5	82 56.0	83 55.3	84 54.4	
52	72 53.1	73 52.8	74 52.3	75 51.8	76 51.2	77 50.5	78 49.6	79 48.7	80 47.4	81 46.0	82 44.1	83 41.6	84 38.3	
48	72 44.7	73 43.8	74 42.8	75 41.6	76 40.3	77 38.7	78 36.9	79 34.8	80 32.1	81 29.0	82 25.0	83 19.9	84 13.1	
44	72 33.0	73 31.4	74 29.6	75 27.6	76 25.3	77 22.6	78 19.5	79 15.8	80 11.3	81 6.1	82 59.5	83 51.2	84 40.5	
40	72 18.0	73 15.7	74 12.9	75 9.8	76 6.3	77 2.3	78 57.6	79 45.8	80 38.0	81 28.6	82 17.0	83 2.4		
36	72 0.1	73 56.8	74 53.0	75 48.6	76 43.7	77 38.1	78 31.8	79 24.6	80 15.9	81 5.5	82 53.2	83 38.4	84 20.1	
32	71 39.3	72 34.8	73 30.0	74 24.2	75 17.8	76 10.5	77 2.4	78 53.3	79 42.3	80 29.3	81 14.2	82 56.2	83 34.7	
28	71 15.7	72 10.1	73 3.9	74 56.8	75 48.8	76 39.8	77 29.9	78 18.6	79 5.5	80 50.0	81 32.4	82 11.3	83 46.9	
24	70 49.6	71 42.7	72 35.2	73 26.7	74 17.2	75 6.5	76 54.6	77 41.1	78 25.8	79 8.2	80 47.9	81 24.5	82 57.3	
20	70 21.1	71 13.0	72 3.9	73 53.9	74 42.9	75 30.5	76 16.7	77 1.2	78 43.8	79 23.9	80 1.5	81 35.8	82 7.9	6.6
16	69 50.4	70 40.8	71 30.6	72 19.0	73 6.3	74 52.3	75 36.7	76 19.4	77 59.8	78 38.0	79 13.4	80 45.8	81 14.4	
12	69 17.6	70 6.8	71 55.1	72 42.3	73 27.8	74 12.0	75 54.8	76 35.7	77 14.4	78 50.6	79 24.1	80 54.4	81 77.2	21.4
8	68 43.0	69 30.8	70 17.7	71 3.2	72 47.4	73 30.0	74 11.1	75 50.4	76 27.3	77 1.8	78 33.5	79 2.3	80 76.7	27.9
4	68 6.5	68 53.1	69 38.5	70 22.7	71 5.4	72 46.5	73 26.0	74 3.6	75 39.1	76 11.9	77 42.3	78 7.5	81 47.5	33.6
23 0	67 28.5	68 13.8	69 58.0	70 40.8	71 22.0	72 7.1	73 39.6	74 15.8	75 49.6	76 21.2	77 50.0	78 15.9	79 38.9	1
22 56	66 49.1	67 33.1	68 15.9	69 57.5	70 37.3	71 15.5	72 52.2	73 26.9	74 59.5	75 29.6	76 57.2	77 22.0	78 44.0	
52	66 8.2	66 51.0	67 32.6	68 13.0	69 51.4	70 28.4	71 3.7	72 37.2	73 8.5	74 37.2	75 3.8	76 27.6	77 48.6	
48	65 26.2	66 7.7	67 48.2	68 27.2	69 4.6	70 40.3	71 14.4	72 46.7	73 16.7	74 44.5	75 10.0	76 32.7	77 52.9	
44	64 43.0	65 23.5	66 2.7	67 40.6	68 16.7	69 51.4	70 24.3	71 55.3	72 36.9	73 24.4	74 51.2	75 37.5	76 57.0	
40	63 58.7	64 38.0	65 16.3	66 53.0	67 28.1	68 1.6	69 33.4	70 3.5	71 68.3	72 31.5	73 57.3	74 21.0	75 42.1	0.9
36	63 13.5	64 51.9	65 28.9	66 4.7	67 38.7	68 11.2	69 42.0	70 11.2	71 67.3	72 38.2	73 3.1	74 26.0	75 46.4	4.8
32	62 27.5	63 4.8	64 40.9	65 15.6	66 48.6	67 20.2	68 50.1	69 18.2	70 66.4	71 54.6	72 8.6	73 30.7	74 50.7	8.3
28	61 40.6	62 17.0	63 52.1	64 25.9	65 57.9	66 28.6	67 57.6	68 24.9	69 55.0	70 36.6	71 13.8	72 66.5	73 54.6	11.8
24	60 53.0	61 28.4	62 2.6	63 35.5	64 6.8	65 36.5	66 4.7	67 31.2	68 56.0	69 65.1	70 18.8	71 39.7	72 65.5	15.1
20	60 4.7	60 39.3	61 12.6	62 44.7	63 14.9	64 44.0	65 11.3	66 37.2	67 1.4	68 23.5	69 43.8	70 2.1	71 65.5	18.4
16	59 15.8	59 49.5	60 22.1	61 53.2	62 22.8	63 51.0	64 17.8	65 43.0	66 6.4	67 28.0	68 47.8	69 5.6	70 64.2	21.6
12	58 26.3	58 59.2	59 31.0	60 1.4	61 30.2	62 57.7	63 23.8	64 48.4	65 11.2	66 23.2	67 51.6	68 9.1	69 24.7	
8	57 36.2	58 8.4	59 39.4	60 9.1	61 59.3	62 37.3	63 4.2	64 29.6	65 53.5	66 15.8	67 36.4	68 55.3	69 12.4	27.8
4	56 45.7	57 17.2	58 47.4	59 16.4	60 45.8	61 14.5	62 10.3	63 59.3	64 58.5	65 20.2	66 40.4	67 58.9	68 15.7	30.7
22 0	55 54.8	56 25.5	57 55.1	58 23.5	59 50.4	60 16.0	61 40.3	62 5.9	63 3.2	64 59.2	65 44.2	66 2.4	67 60.3	33.7
21 56	55 3.4	55 33.4	56 2.4	57 30.2	58 56.5	59 21.5	60 45.3	61 5.8	62 7.7	63 58.2	64 48.0	65 5.8	66 59.2	36.5
52	54 11.6	54 41.0	55 9.4	56 36.5	57 2.3	58 26.9	59 50.1	60 12.1	61 57.3	62 32.6	63 51.5	64 9.1	65 58.3	39.4
48	53 19.4	54 43.8	55 16.0	56 42.6	57 7.9	58 32.0	59 54.8	60 16.3	61 56.3	62 55.5	63 15.7	64 12.3	65 57.9	42.2
44	52 27.0	53 55.2	54 22.3	55 48.5	56 13.2	57 25.4	58 36.8	59 54.3	60 20.4	61 55.4	62 58.5	63 15.4	64 30.9	45.0
40	51 34.1	52 1.5	53 28.6	54 54.1	55 18.4	56 41.5	57 3.5	58 24.3	59 43.7	60 5.5	61 17.5	62 33.8	63 55.5	47.7
36	50 41.0	51 8.2	52 34.4	53 59.6	54 23.3	55 46.1	56 7.7	57 53.2	58 15.3	59 47.2	60 5.1	61 21.5	62 36.7	50.4
32	49 47.7	50 14.3	51 40.1	52 4.8	53 28.2	54 50.5	55 11.7	56 52.3	57 31.8	58 50.7	59 8.2	60 53.3	61 39.4	53.1
28	48 54.0	49 20.3	50 45.5	51 9.8	52 32.8	53 54.8	54 15.6	55 51.3	56 45.1	57 54.0	58 13.5	59 27.4	60 52.2	55.8
24	48 0.2	48 26.0	49 50.8	50 14.6	51 49.3	52 24.9	53 58.9	54 19.5	55 50.3	56 57.2	57 14.3	58 30.3	59 45.0	58.5
20	47 6.1	47 31.5	48 55.9	49 19.3	50 48.1	51 15.4	52 2.9	53 49.2	54 42.4	55 0.4	56 17.3	57 33.2	58 47.7	1.2
16	46 11.9	46 36.8	47 0.8	48 23.8	49 45.8	50 6.7	51 48.2	52 26.6	53 45.7	54 3.6	55 20.3	56 36.0	57 50.4	3.8
12	45 17.4	45 41.9	46 5.5	47 28.3	48 49.8	49 10.5	50 47.3	51 30.2	52 49.0	53 6.7	54 23.3	55 38.8	56 53.1	6.4
8	44 22.7	44 46.8	45 10.1	46 32.5	47 53.8	48 14.2	49 46.3	50 52.2	51 47.9	52 9.7	53 26.1	54 41.6	55 55.8	9.0
4	43 27.9	43 51.6	44 14.6	45 36.7	46 57.6	47 17.8	48 45.3	49 37.1	50 55.4	51 12.7	52 46.2	53 44.3	54 58.5	11.6
21 0	42 32.9	43 56.2	44 18.9	45 40.7	46 1.4	47 21.3	48 40.4	49 58.5	50 15.7	51 31.8	52 47.0	53 1.1	54 46.3	

0
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LATITUDE 17°.

Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
24 0	86 0 0	87 0 0	88 0 0	89 0 0	90 0 0	89 0 0	88 0 0	87 0 0	86 0 0	85 0 0	84 0 0	83 0 0	82 0 0	0 0	81 0 0
23 56	85 53 1	86 50 9	87 46 9	88 36 8	89 2 6	88 37 1	87 47 1	86 51 2	85 53 4	84 54 7	83 55 6	82 56 3	81 56 3	4	80 56 3
52	85 33 5	86 26 0	87 13 5	87 50 2	88 5 2	87 50 8	87 14 4	86 27 1	85 34 5	84 39 4	83 42 9	82 45 3	81 45 3	8	80 45 3
48	85 3 7	85 50 0	86 29 4	86 57 3	87 7 9	86 58 1	86 30 9	85 52 0	85 5 8	84 15 4	83 22 4	82 27 5	81 27 5	12	80 27 5
44	84 26 3	85 7 0	85 39 9	86 2 2	86 10 5	85 3 3	85 42 1	85 9 8	84 29 6	83 44 3	82 55 3	82 3 7	81 3 7	16	80 3 7
40	83 43 7	84 19 4	84 47 6	85 6 2	85 13 1	85 7 6	84 50 5	84 23 4	83 48 4	83 7 7	82 22 7	81 34 8	80 34 8	20	79 34 8
36	82 57 5	83 29 2	83 53 7	84 9 7	84 15 7	84 11 5	83 57 2	83 34 1	83 3 5	82 27 1	81 46 0	81 1 6	80 1 6	24	79 1 6
32	82 8 6	82 37 1	82 58 8	83 12 8	83 18 4	83 14 9	83 2 9	82 43 0	82 16 0	81 43 3	81 5 8	80 24 8	79 24 8	28	78 24 8
28	81 17 9	81 43 7	82 3 2	82 15 9	82 21 0	82 18 3	82 7 9	81 50 5	81 26 6	80 57 0	80 23 0	79 44 8	78 44 8	32	77 44 8
24	80 25 9	80 49 4	81 7 2	81 18 8	81 23 6	81 21 5	81 12 6	80 57 2	80 35 8	80 9 2	79 38 0	79 2 9	78 2 9	36	77 2 9
20	79 32 8	79 54 6	80 10 9	80 21 6	80 26 2	80 24 7	80 17 0	80 3 4	79 44 2	79 20 1	78 51 4	78 18 8	77 18 8	40	76 18 8
16	78 38 9	78 59 2	79 14 4	79 24 6	79 28 9	79 27 8	79 21 1	79 8 8	78 51 6	78 29 6	78 3 3	77 33 1	76 33 1	44	75 33 1
12	77 44 5	78 3 4	78 17 6	78 27 3	78 31 7	78 31 0	78 24 9	78 13 9	77 58 7	77 38 2	77 14 2	76 45 9	75 45 9	48	74 45 9
8	76 49 5	77 7 4	77 20 8	77 29 9	77 34 2	77 33 9	77 28 8	77 19 0	77 4 9	76 46 2	76 24 0	75 57 9	74 57 9	52	73 57 9
4	75 54 1	76 11 0	76 23 8	76 32 5	76 36 7	76 36 8	76 32 7	76 23 7	76 10 8	75 53 6	75 33 2	75 8 9	74 8 9	0 56	73 8 9
23 0	74 58 5	75 14 5	75 26 8	75 35 1	75 39 4	75 39 8	75 36 1	75 28 1	75 16 4	75 0 6	74 41 6	74 19 1	73 19 1	1 0	72 19 1
22 56	74 2 4	74 17 9	74 29 6	74 37 9	74 42 3	74 42 8	74 39 4	74 32 3	74 21 8	74 7 3	73 49 7	73 28 6	72 28 6	4	71 28 6
52	73 6 3	73 21 0	73 32 4	73 40 6	73 45 0	73 45 7	73 42 9	73 36 4	73 26 9	73 13 5	72 57 2	72 37 5	71 37 5	8	70 37 5
48	72 10 0	72 24 2	72 35 3	72 43 7	72 47 6	72 48 7	72 46 4	72 40 6	72 31 8	72 19 5	72 4 4	71 46 0	70 46 0	12	69 46 0
44	71 13 5	71 27 3	71 38 1	71 45 7	71 50 2	71 51 6	71 49 9	71 44 7	71 36 6	71 25 1	71 11 2	70 54 0	69 54 0	16	68 54 0
40	70 17 0	70 30 4	70 40 8	70 48 4	70 52 9	70 54 5	70 53 2	70 48 7	70 41 3	70 30 7	70 17 6	70 1 6	69 1 6	20	68 1 6
36	69 20 2	69 33 2	69 43 5	69 51 1	69 55 7	69 57 4	69 56 5	69 52 5	69 45 8	69 36 1	69 23 9	69 8 9	68 8 9	24	67 8 9
32	68 23 4	68 36 0	68 46 2	68 53 7	68 58 5	68 0 5	68 59 7	68 56 3	68 50 3	68 41 4	68 30 1	68 16 0	67 16 0	28	66 16 0
28	67 26 4	67 38 9	67 48 8	67 56 3	68 1 2	68 3 5	68 3 1	68 0 0	67 54 6	67 46 5	67 36 0	67 22 9	66 22 9	32	65 22 9
24	66 29 5	66 41 7	66 51 5	66 58 9	67 3 8	67 6 4	67 6 4	67 3 7	66 58 9	66 51 4	66 41 8	66 29 6	65 29 6	36	64 29 6
20	65 32 4	65 44 5	65 54 1	66 1 6	66 6 6	66 9 3	66 9 7	66 7 6	66 3 2	65 56 3	65 47 3	65 36 0	64 36 0	40	63 36 0
16	64 35 4	64 47 1	64 56 8	65 4 2	65 9 3	65 12 2	65 12 9	65 11 2	65 7 4	65 1 1	64 52 8	64 42 3	63 42 3	44	62 42 3
12	63 38 2	63 49 9	63 59 3	64 6 8	64 12 0	64 15 2	64 16 1	64 14 9	64 11 5	64 5 9	63 58 3	63 48 4	62 48 4	48	61 48 4
8	62 41 0	62 52 5	63 2 0	63 9 4	63 14 8	63 18 2	63 19 4	63 18 4	63 15 6	63 10 6	63 3 7	62 54 5	61 54 5	52	60 54 5
4	61 43 8	61 55 2	62 4 6	62 12 1	62 17 5	62 21 2	62 22 6	62 22 1	62 19 7	62 15 2	62 8 9	62 0 5	61 0 5	1 56	59 0 5
22 0	60 46 6	60 57 8	61 7 2	61 14 7	61 20 4	61 24 1	61 25 9	61 25 8	61 23 8	61 19 8	61 14 0	61 6 3	60 6 3	2 0	59 6 3
21 56	59 49 3	60 0 5	60 9 8	60 17 4	60 23 1	60 27 1	60 29 2	60 29 4	60 27 9	60 24 3	60 19 1	60 11 9	59 11 9	4	58 11 9
52	58 52 0	59 3 1	59 12 5	59 20 1	59 25 9	59 30 1	59 32 5	59 33 0	59 31 9	59 28 8	59 24 1	59 17 6	58 17 6	8	57 17 6
48	57 54 7	58 5 7	58 15 1	58 22 8	58 28 8	58 33 1	58 35 8	58 36 7	58 35 9	58 33 2	58 29 1	58 23 2	57 23 2	12	56 23 2
44	56 57 3	57 8 4	57 17 7	57 25 5	57 31 7	57 36 2	57 39 1	57 40 3	57 39 9	57 37 7	57 34 1	57 28 6	56 28 6	16	55 28 6
40	56 0 0	56 10 9	56 20 4	56 28 2	56 34 5	56 39 3	56 42 4	56 43 8	56 43 9	56 42 1	56 39 0	56 34 1	55 34 1	20	54 34 1
36	55 2 6	55 13 6	55 23 0	55 31 0	55 37 4	55 42 3	55 45 7	55 47 5	55 47 9	55 46 5	55 43 9	55 39 5	54 39 5	24	53 39 5
32	54 5 3	54 16 2	54 25 7	54 33 7	54 40 3	54 45 3	54 49 1	54 51 1	54 51 9	54 51 0	54 48 7	54 44 9	53 44 9	28	52 44 9
28	53 8 0	53 18 9	53 28 3	53 36 5	53 43 1	53 48 6	53 52 4	53 54 8	53 55 9	53 55 3	53 53 6	53 50 2	52 50 2	32	51 50 2
24	52 10 6	52 21 5	52 31 1	52 39 2	52 46 1	52 51 6	52 55 7	52 58 4	52 59 9	52 59 8	52 58 4	52 55 5	51 55 5	36	50 55 5
20	51 13 2	51 24 1	51 33 7	51 42 1	51 49 0	51 54 8	51 59 1	52 2 1	52 3 9	52 4 1	52 3 1	52 0 8	51 0 8	40	49 0 8
16	50 15 9	50 26 7	50 36 4	50 44 9	50 52 0	50 57 9	51 2 5	51 5 8	51 7 8	51 8 4	51 8 0	51 6 0	50 6 0	44	48 6 0
12	49 18 4	49 29 4	49 39 1	49 47 6	49 55 0	50 1 1	50 5 9	50 9 5	50 11 8	50 12 9	50 12 7	50 11 2	49 11 2	48	47 11 2
8	48 21 1	48 32 0	48 41 9	48 50 5	48 58 0	49 4 3	49 9 3	49 13 1	49 15 9	49 17 1	49 17 5	49 16 4	48 16 4	52	46 16 4
4	47 23 7	47 34 7	47 44 6	47 53 4	48 1 0	48 7 4	48 12 7	48 16 9	48 19 8	48 21 6	48 22 3	48 21 7	47 21 7	2 56	45 21 7
21 0	46 26 3	46 37 4	46 47 4	46 56 3	47 4 0	47 10 6	47 16 2	47 20 6	47 23 9	47 25 9	47 27 1	47 26 9	46 26 9	3 0	45 26 9

LATITUDE 17°.																	
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.														Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°			
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
21	0	42 32.9	42 56.2	43 18.9	43 40.7	44 1.4	44 21.3	44 40.4	44 58.5	45 15.7	45 31.8	45 47.0	46 1.1	46 14.3		3	0
20	56	41 37.7	42 0.8	42 23.1	42 44.6	43 5.1	43 24.8	43 43.6	44 1.6	44 18.6	44 34.5	44 49.7	45 3.8	45 16.9		4	4
	52	40 42.5	41 5.2	41 27.2	41 48.4	42 8.7	42 28.1	42 46.8	43 4.6	43 21.4	43 37.3	43 52.4	44 6.4	44 19.6		8	8
	48	39 47.0	40 9.4	40 31.2	40 52.2	41 12.1	41 31.4	41 49.9	42 7.5	42 24.3	42 40.1	42 55.0	43 9.0	43 22.2		12	12
	44	38 51.5	39 13.6	39 35.1	39 55.8	40 15.6	40 34.6	40 52.9	41 10.4	41 27.1	41 42.8	41 57.7	42 11.7	42 24.8		16	16
	40	37 55.8	38 17.7	38 38.9	38 59.4	39 18.9	39 37.8	39 55.9	40 13.3	40 29.8	40 45.5	41 0.4	41 14.3	41 27.4		20	20
	36	37 0.0	37 21.6	37 42.6	38 2.8	38 22.2	38 40.9	38 58.9	39 16.1	39 32.6	39 48.2	40 3.0	40 16.9	40 30.1		24	24
	32	36 4.1	36 25.5	36 46.2	37 6.2	37 25.4	37 44.0	38 1.8	38 19.0	38 35.3	38 50.9	39 5.6	39 19.5	39 32.7		28	28
	28	35 8.1	35 29.3	35 49.7	36 9.6	36 28.6	36 47.0	37 4.8	37 21.8	37 38.1	37 53.5	38 8.2	38 22.2	38 35.3		32	32
	24	34 12.1	34 33.0	34 53.3	35 12.9	35 31.8	35 50.0	36 7.6	36 24.6	36 40.7	36 56.1	37 10.8	37 24.8	37 38.0		36	36
	20	33 15.9	33 36.6	33 56.7	34 16.1	34 34.9	34 53.0	35 10.4	35 27.2	35 43.3	35 58.7	36 13.5	36 27.4	36 40.7		40	40
	16	32 19.6	32 40.1	33 0.0	33 19.3	33 37.9	33 55.9	34 13.2	34 29.9	34 46.0	35 1.4	35 16.1	35 30.1	35 43.3		44	44
	12	31 23.3	31 43.6	32 3.3	32 22.5	32 40.9	32 58.7	33 16.0	33 32.7	33 48.6	34 4.0	34 18.7	34 32.7	34 46.1		48	48
	8	30 26.9	30 47.0	31 6.5	31 25.5	31 43.8	32 1.5	32 18.8	32 35.3	32 51.3	33 6.6	33 21.3	33 35.4	33 48.7		52	52
	4	29 30.4	29 50.3	30 9.7	30 28.6	30 46.7	31 4.4	31 21.5	31 38.0	31 54.0	32 9.3	32 24.0	32 38.0	32 51.5	3	56	56
20	0	28 33.9	28 53.6	29 12.8	29 31.5	29 49.6	30 7.1	30 24.2	30 40.7	30 56.6	31 11.9	31 26.6	31 40.7	31 54.2	4	0	0
19	56	27 37.3	27 56.8	28 15.9	28 34.5	28 52.4	29 9.9	29 26.9	29 43.4	29 59.2	30 14.5	30 29.2	30 43.3	30 57.0	4	4	4
	52	26 40.6	27 0.0	27 19.0	27 37.4	27 55.2	28 12.7	28 29.6	28 46.0	29 1.8	29 17.1	29 31.9	29 46.1	29 59.8	8	8	8
	48	25 43.9	26 3.1	26 21.9	26 40.3	26 58.1	27 15.4	27 32.3	27 48.6	28 4.4	28 19.7	28 34.6	28 48.8	29 2.6	12	12	12
	44	24 47.1	25 6.2	25 24.9	25 43.2	26 0.8	26 18.1	26 34.9	26 51.2	27 7.1	27 22.4	27 37.3	27 51.6	28 5.4	16	16	16
	40	23 50.3	24 9.2	24 27.8	24 46.0	25 3.6	25 20.7	25 37.5	25 53.8	26 9.7	26 25.1	26 39.9	26 54.3	27 8.2	20	20	20
	36	22 53.4	23 12.2	23 30.7	23 48.8	24 6.3	24 23.5	24 40.2	24 56.5	25 12.3	25 27.7	25 42.7	25 57.0	26 11.0	24	24	24
	32	21 56.5	22 15.2	22 33.6	22 51.5	23 9.0	23 26.1	23 42.8	23 59.1	24 15.0	24 30.4	24 45.3	24 59.8	25 13.9	28	28	28
	28	20 59.5	21 18.1	21 36.4	21 54.3	22 11.7	22 28.7	22 45.4	23 1.8	23 17.6	23 33.0	23 48.1	24 2.6	24 16.8	32	32	32
	24	20 2.5	20 21.0	20 39.2	20 57.0	21 14.3	21 31.4	21 48.0	22 4.4	22 20.3	22 35.7	22 50.9	23 5.5	23 19.7	36	36	36
	20	19 5.5	19 23.9	19 41.9	19 59.7	20 17.0	20 34.0	20 50.7	21 7.0	21 22.9	21 38.5	21 53.6	22 8.3	22 22.7	40	40	40
	16	18 8.4	18 26.6	18 44.7	19 2.4	19 19.7	19 36.7	19 53.3	20 9.6	20 25.6	20 41.1	20 56.4	21 11.2	21 25.7	44	44	44
	12	17 11.3	17 29.5	17 47.5	18 5.1	18 22.3	18 39.3	18 55.9	19 12.3	19 28.3	19 43.8	19 59.2	20 14.1	20 28.7	48	48	48
	8	16 14.2	16 32.3	16 50.2	17 7.8	17 25.0	17 41.9	17 58.6	18 14.9	18 30.9	18 46.6	19 2.0	19 17.0	19 31.7	52	52	52
	4	15 17.0	15 35.1	15 52.9	16 10.4	16 27.5	16 44.5	17 1.2	17 17.6	17 33.6	17 49.4	18 4.9	18 19.9	18 34.8	4	56	56
19	0	14 19.7	14 37.8	14 55.6	15 13.0	15 30.2	15 47.1	16 3.8	16 20.2	16 36.4	16 52.2	17 7.7	17 22.9	17 37.9	5	0	0
18	56	13 22.6	13 40.5	13 58.2	14 15.7	14 32.8	14 49.8	15 6.4	15 22.9	15 39.1	15 55.0	16 10.6	16 25.9	16 41.0	4	4	4
	52	12 25.4	12 43.2	13 0.9	13 18.4	13 35.5	13 52.3	14 9.1	14 25.6	14 41.9	14 57.8	15 13.6	15 29.0	15 44.1	8	8	8
	48	11 28.1	11 45.9	12 3.5	12 21.0	12 38.1	12 55.0	13 11.7	13 28.3	13 44.6	14 0.7	14 16.5	14 32.0	14 47.4	12	12	12
	44	10 30.8	10 48.6	11 6.2	11 23.6	11 40.7	11 57.7	12 14.4	12 31.0	12 47.4	13 3.5	13 19.5	13 35.1	13 50.6	16	16	16
	40	9 33.5	9 51.2	10 8.8	10 26.2	10 43.3	11 0.3	11 17.1	11 33.8	11 50.2	12 6.4	12 22.5	12 38.3	12 53.9	20	20	20
	36	8 36.2	8 53.9	9 11.4	9 28.8	9 45.9	10 3.0	10 19.9	10 36.6	10 53.1	11 9.4	11 25.6	11 41.4	11 57.2	24	24	24
	32	7 38.9	7 56.5	8 14.1	8 31.5	8 48.6	9 5.7	9 22.6	9 39.4	9 56.0	10 12.4	10 28.6	10 44.6	11 0.6	28	28	28
	28	6 41.5	6 59.1	7 16.7	7 34.1	7 51.3	8 8.3	8 25.3	8 42.2	8 58.9	9 15.3	9 31.7	9 47.9	10 4.0	32	32	32
	24	5 44.2	6 1.8	6 19.3	6 36.7	6 53.9	7 11.0	7 28.0	7 45.0	8 1.8	8 18.4	8 34.9	8 51.2	9 7.4	36	36	36
	20	4 46.9	5 4.4	5 21.9	5 39.3	5 56.5	6 13.7	6 30.9	6 47.8	7 4.7	7 21.4	7 38.1	7 54.5	8 10.9	40	40	40
	16	3 49.5	4 7.0	4 24.6	4 42.0	4 59.2	5 16.5	5 33.6	5 50.7	6 7.7	6 24.5	6 41.3	6 57.9	7 14.5	44	44	44
	12	2 52.1	3 9.7	3 27.1	3 44.7	4 1.9	4 19.2	4 36.4	4 53.6	5 10.7	5 27.6	5 44.6	6 1.4	6 18.1	48	48	48
	8	1 54.8	2 12.3	2 29.8	2 47.3	3 4.6	3 21.9	3 39.3	3 56.6	4 13.7	4 30.8	4 47.9	5 4.8	5 21.7	52	52	52
	4	0 57.4	1 14.9	1 32.6	1 50.0	2 7.3	2 24.8	2 42.1	2 59.5	3 16.8	3 34.0	3 51.2	4 8.3	4 25.3	5	56	56
18	0	0 0.0	0 17.5	0 35.1	0 52.7	1 10.1	1 27.6	1 45.0	2 2.5	2 19.9	2 37.3	2 54.6	3 11.9	3 29.1	6	0	0

LATITUDE 17°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	° ' "
21 0	46 26.3	46 37.4	46 47.4	46 56.3	47 4.0	47 10.6	47 16.2	47 20.6	47 23.9	47 25.9	47 27.1	47 26.9	3 0		
20 56	45 29.0	45 40.1	45 50.1	45 59.1	46 7.0	46 13.9	46 19.7	46 24.3	46 28.0	46 30.4	46 31.8	46 32.0	4 4		
52	44 31.6	44 42.8	44 52.9	45 2.0	45 10.1	45 17.1	45 23.2	45 28.1	45 32.0	45 34.8	45 36.6	45 37.2	8		
48	43 34.3	43 45.5	43 55.7	44 4.9	44 13.1	44 20.4	44 26.7	44 31.9	44 36.1	44 39.1	44 41.4	44 42.4	12		
44	42 36.9	42 48.2	42 58.6	43 7.9	43 16.3	43 23.7	43 30.2	43 35.7	43 40.2	43 43.6	43 46.1	43 47.7	16		
40	41 39.6	41 50.9	42 1.3	42 10.9	42 19.5	42 27.1	42 33.8	42 39.4	42 44.3	42 48.0	42 51.0	42 52.8	20		
36	40 42.3	40 53.7	41 4.2	41 13.9	41 22.6	41 30.5	41 37.3	41 43.3	41 48.4	41 52.5	41 55.8	41 58.1	24		
32	39 45.0	39 56.5	40 7.1	40 16.9	40 25.8	40 33.8	40 41.0	40 47.1	40 52.6	40 57.0	41 0.6	41 3.3	28		
28	38 47.7	38 59.3	39 10.0	39 20.0	39 28.9	39 37.2	39 44.6	39 51.1	39 56.8	40 1.5	40 5.4	40 8.5	32		
24	37 50.4	38 2.1	38 13.0	38 23.0	38 32.2	38 40.6	38 48.3	38 55.0	39 1.1	39 6.0	39 10.3	39 13.7	36		
20	36 53.1	37 4.9	37 15.8	37 26.1	37 35.5	37 44.1	37 52.0	37 59.0	38 5.2	38 10.6	38 15.3	38 19.0	40		
16	35 55.9	36 7.7	36 18.8	36 29.2	36 38.8	36 47.7	36 55.7	37 2.9	37 9.5	37 15.2	37 20.2	37 24.2	44		
12	34 58.6	35 10.6	35 21.8	35 32.4	35 42.1	35 51.2	35 59.5	36 7.0	36 13.8	36 19.8	36 25.1	36 29.6	48		
8	34 1.4	34 13.4	34 24.8	34 35.5	34 45.5	34 54.7	35 3.3	35 11.0	35 18.2	35 24.4	35 30.1	35 34.9	52		
4	33 4.2	33 16.4	33 27.9	33 38.7	33 48.8	33 58.3	34 7.0	34 15.1	34 22.5	34 29.1	34 35.0	34 40.2	3 56		
20 0	32 7.1	32 19.3	32 31.0	32 41.9	32 52.2	33 1.9	33 10.9	33 19.2	33 26.9	33 33.7	33 40.1	33 45.6	4 0		
19 56	31 9.9	31 22.3	31 34.0	31 45.2	31 55.6	32 5.6	32 14.8	32 23.3	32 31.3	32 38.5	32 45.1	32 51.0	4 4		
52	30 12.8	30 25.3	30 37.3	30 48.4	30 59.1	31 9.2	31 18.7	31 27.5	31 35.7	31 43.2	31 50.2	31 56.5	8		
48	29 15.7	29 28.2	29 40.3	29 51.8	30 2.6	30 13.0	30 22.6	30 31.7	30 40.2	30 48.0	30 55.4	31 2.0	12		
44	28 18.6	28 31.3	28 43.5	28 55.1	29 6.2	29 16.7	29 26.6	29 35.9	29 44.7	29 52.9	30 0.6	30 7.5	16		
40	27 21.5	27 34.4	27 46.7	27 58.5	28 9.7	28 20.5	28 30.6	28 40.2	28 49.3	28 57.8	29 5.7	29 13.0	20		
36	26 24.5	26 37.5	26 49.9	27 1.9	27 13.3	27 24.3	27 34.7	27 44.5	27 54.0	28 2.7	28 10.9	28 18.6	24		
32	25 27.4	25 40.6	25 53.2	26 5.4	26 17.0	26 28.1	26 38.8	26 48.9	26 58.6	27 7.6	27 16.2	27 24.3	28		
28	24 30.4	24 43.7	24 56.5	25 8.8	25 20.7	25 32.0	25 43.0	25 53.3	26 3.2	26 12.6	26 21.6	26 29.9	32		
24	23 33.5	23 46.9	23 59.9	24 12.4	24 24.4	24 36.0	24 47.2	24 57.7	25 8.0	25 17.7	25 26.9	25 35.6	36		
20	22 36.6	22 50.1	23 3.2	23 15.9	23 28.2	23 40.0	23 51.4	24 2.3	24 12.8	24 22.7	24 32.3	24 41.4	40		
16	21 39.7	21 53.4	22 6.7	22 19.5	22 32.0	22 44.0	22 55.7	23 6.8	23 17.6	23 27.8	23 37.8	23 47.2	44		
12	20 42.8	20 56.7	21 10.1	21 23.2	21 35.8	21 48.1	22 0.0	22 11.4	22 22.4	22 33.1	22 43.3	22 53.1	48		
8	19 46.0	20 0.0	20 13.6	20 26.9	20 39.7	20 52.3	21 4.1	21 16.0	21 27.4	21 38.3	21 48.9	21 59.0	52		
4	18 49.3	19 3.4	19 17.1	19 30.6	19 43.7	19 56.4	20 8.8	20 20.8	20 32.4	20 43.6	20 54.5	21 5.0	4 56		
19 0	17 52.5	18 6.8	18 20.7	18 34.4	18 47.7	19 0.6	19 13.3	19 25.5	19 37.5	19 49.0	20 0.2	20 11.0	5 0		
18 56	16 55.7	17 10.2	17 24.4	17 38.2	17 51.7	18 4.9	18 17.8	18 30.3	18 42.5	18 54.4	19 5.9	19 17.1	4 4		
52	15 59.0	16 13.7	16 28.0	16 42.1	16 55.8	17 9.3	17 22.3	17 35.2	17 47.7	17 59.8	18 11.7	18 23.2	8		
48	15 2.4	15 17.2	15 31.7	15 46.0	16 0.0	16 13.6	16 27.0	16 40.1	16 52.9	17 5.4	17 17.5	17 29.4	12		
44	14 5.8	14 20.7	14 35.5	14 49.9	15 4.1	15 18.1	15 31.8	15 45.1	15 58.2	16 10.9	16 23.5	16 35.7	16		
40	13 9.2	13 24.4	13 39.3	13 54.0	14 8.4	14 22.6	14 36.5	14 50.1	15 3.5	15 16.6	15 29.5	15 42.0	20		
36	12 12.7	12 28.1	12 43.1	12 58.0	13 12.7	13 27.1	13 41.3	13 55.2	14 9.0	14 22.3	14 35.5	14 48.4	24		
32	11 16.3	11 31.8	11 47.1	12 2.2	12 17.0	12 31.7	12 46.1	13 0.4	13 14.4	13 28.1	13 41.7	13 54.9	28		
28	10 19.8	10 35.5	10 51.0	11 6.3	11 21.4	11 36.4	11 51.1	12 5.6	12 19.9	12 34.0	12 47.9	13 1.5	32		
24	9 23.4	9 39.3	9 55.1	10 10.6	10 25.9	10 41.1	10 56.1	11 10.9	11 25.5	11 39.9	11 54.2	12 8.2	36		
20	8 27.1	8 43.2	8 59.1	9 14.9	9 30.5	9 45.9	10 1.2	10 16.2	10 31.2	10 45.9	11 0.6	11 14.9	40		
16	7 30.8	7 47.1	8 3.2	8 19.2	8 35.1	8 50.8	9 6.4	9 21.7	9 37.0	9 52.0	10 7.0	10 21.7	44		
12	6 34.6	6 51.1	7 7.4	7 23.7	7 39.8	7 55.8	8 11.6	8 27.3	8 42.9	8 58.2	9 13.5	9 28.5	48		
8	5 38.4	5 55.1	6 11.7	6 28.1	6 44.5	7 0.7	7 16.9	7 32.9	7 48.8	8 4.5	8 20.1	8 35.5	52		
4	4 42.3	4 59.2	5 16.0	5 32.7	5 49.3	6 5.9	6 22.3	6 38.6	6 54.8	7 10.8	7 26.8	7 42.6	5 56		
18 0	3 46.2	4 3.4	4 20.4	4 37.3	4 54.2	5 11.0	5 27.7	5 44.3	6 0.9	6 17.3	6 33.6	6 49.8	6 0		

LATITUDE 17°.															
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	73 0 0	72 0 0	71 0 0	70 0 0	69 0 0	68 0 0	67 0 0	66 0 0	65 0 0	64 0 0	63 0 0	62 0 0	61 0 0	60 0 0	0 0
23 56	72 58 3	71 58 5	70 58 4	69 58 5	68 58 6	67 58 6	66 58 7	65 58 8	64 58 9	63 58 8	62 59 0	61 58 9	60 59 1	59 1	4
52	72 53 1	71 53 5	70 54 0	69 54 2	68 54 4	67 54 5	66 54 8	65 55 2	64 55 4	63 55 4	62 55 6	61 55 8	60 56 0	56 0	8
48	72 44 7	71 45 6	70 46 4	69 46 9	68 47 5	67 47 9	66 48 4	65 49 1	64 49 6	63 49 8	62 50 3	61 50 6	60 51 0	51 0	12
44	72 33 0	71 34 4	70 35 8	69 36 8	68 37 9	67 38 7	66 39 6	65 40 6	64 41 3	63 42 0	62 42 8	61 43 3	60 44 0	44 0	16
40	72 18 0	71 20 2	70 22 2	69 24 1	68 25 6	67 27 0	66 28 4	65 29 7	64 30 9	63 32 0	62 33 1	61 34 1	60 35 0	40	20
36	72 0 1	71 3 3	70 6 0	69 8 6	68 10 7	67 12 8	66 14 7	65 16 7	64 18 3	63 19 8	62 21 4	61 22 8	60 24 1	36	24
32	71 39 3	70 43 4	69 47 2	68 50 5	67 53 4	66 56 1	65 58 8	64 59 1	63 46 8	62 49 3	61 51 9	60 54 2	59 56 6	32	28
28	71 15 7	70 21 0	69 25 7	68 30 0	67 33 7	66 37 2	65 40 6	64 43 8	63 46 8	62 49 3	61 51 9	60 54 2	59 56 6	28	32
24	70 49 6	69 56 0	69 1 7	68 7 0	67 11 8	66 16 1	65 20 2	64 24 2	63 27 8	62 31 1	61 34 3	60 37 2	59 40 0	24	36
20	70 21 1	69 28 7	68 35 5	67 41 9	66 47 6	65 52 9	64 57 8	64 2 6	63 6 9	62 10 9	61 14 9	60 18 3	59 21 8	20	40
16	69 50 4	68 59 1	68 7 2	67 14 6	66 21 3	65 27 6	64 33 5	63 39 1	62 44 1	61 48 9	60 53 5	59 57 8	59 1 8	16	44
12	69 17 6	68 27 7	67 36 8	66 45 4	65 53 1	65 0 3	64 7 2	63 13 7	62 19 7	61 25 1	60 30 5	59 35 4	58 40 3	12	48
8	68 43 0	67 54 2	67 4 6	66 14 3	65 23 1	64 31 3	63 39 1	62 46 6	61 53 4	60 59 7	60 5 7	59 11 5	58 17 0	8	52
4	68 6 5	67 19 1	66 30 6	65 41 5	64 51 3	64 0 6	63 9 4	62 17 7	61 25 5	60 32 6	59 39 6	58 46 0	57 52 2	4	0 56
23 0	67 28 5	66 42 3	65 55 1	65 6 9	64 17 9	63 28 3	62 38 0	61 47 3	60 55 9	60 4 0	59 11 8	58 19 0	57 25 9	23 0	1 0
22 56	66 49 1	66 4 0	65 17 9	64 31 0	63 43 0	62 54 4	62 5 2	61 15 4	60 24 9	59 33 9	58 42 5	57 50 5	56 58 3	22 56	4
52	66 8 2	65 24 4	64 39 4	63 53 6	63 6 7	62 19 1	61 30 8	60 42 1	59 52 6	59 2 3	58 11 8	57 20 7	56 29 2	52	8
48	65 26 2	64 43 4	63 59 7	63 14 9	62 29 1	61 42 5	60 55 2	60 7 4	59 18 7	58 29 5	57 39 8	56 49 5	55 58 8	48	12
44	64 43 0	64 1 4	63 18 6	62 35 0	61 50 2	61 4 6	60 18 3	59 31 4	58 43 7	57 55 3	57 6 5	56 17 0	55 27 2	44	16
40	63 58 7	63 18 1	62 36 6	61 53 9	61 10 2	60 25 6	59 40 2	58 54 3	58 7 5	57 20 0	56 32 0	55 43 4	54 54 4	40	20
36	63 13 5	62 34 1	61 53 4	61 11 8	60 29 1	59 45 4	59 1 0	58 16 0	57 30 1	56 43 5	55 56 4	55 8 6	54 20 5	36	24
32	62 27 5	61 48 9	61 9 4	60 28 7	59 46 9	59 4 2	58 20 8	57 36 7	56 51 7	56 5 9	55 19 7	54 32 8	53 45 4	32	28
28	61 40 6	61 3 1	60 24 4	59 44 7	59 3 8	58 22 1	57 39 5	56 56 3	56 12 2	55 27 4	54 42 1	53 55 9	53 9 4	28	32
24	60 53 0	60 16 4	59 38 6	58 59 8	58 20 0	57 39 0	56 57 4	56 15 1	55 31 8	54 47 9	54 3 4	53 18 1	52 32 2	24	36
20	60 4 7	59 29 0	58 52 1	58 14 1	57 35 1	56 55 2	56 14 4	55 32 9	54 50 7	54 7 5	53 23 7	52 39 3	51 54 3	20	40
16	59 15 8	58 40 9	58 4 9	57 27 8	56 49 7	56 10 5	55 30 6	54 50 1	54 8 5	53 26 1	52 43 2	51 59 6	51 15 4	16	44
12	58 26 3	57 52 2	57 17 0	56 40 8	56 3 4	55 25 2	54 46 1	54 6 3	53 25 6	52 44 0	52 2 0	51 19 1	50 35 7	12	48
8	57 36 2	57 3 0	56 28 5	55 53 1	55 16 6	54 39 2	54 0 9	53 21 8	52 41 9	52 1 2	51 19 9	50 37 8	49 55 2	8	52
4	56 45 7	56 13 2	55 39 5	55 4 8	54 29 2	53 52 5	53 14 9	52 36 7	51 57 5	51 17 6	50 37 1	49 55 8	49 13 9	4	1 56
22 0	55 54 8	55 22 9	54 50 0	54 16 2	53 41 1	53 5 2	52 28 4	51 50 9	51 12 6	50 33 3	49 53 6	49 13 0	48 31 8	22 0	2 0
21 56	55 3 4	54 32 2	54 0 0	53 26 8	52 52 5	52 17 2	51 41 3	51 4 6	50 26 9	49 48 4	49 9 3	48 29 6	47 49 1	21 56	4
52	54 11 6	53 41 1	53 9 5	52 37 0	52 3 4	51 28 9	50 53 6	50 17 6	49 40 7	49 2 9	48 24 6	47 45 4	47 5 7	52	8
48	53 19 4	52 49 5	52 18 6	51 46 7	51 13 8	50 40 0	50 5 4	49 30 1	48 53 9	48 16 8	47 39 1	47 0 7	46 21 7	48	12
44	52 27 0	51 57 7	51 27 3	50 56 1	50 23 8	49 50 7	49 16 8	48 42 1	48 6 5	47 30 2	46 53 2	46 15 5	45 37 2	44	16
40	51 34 1	51 5 4	50 35 8	50 5 1	49 33 4	49 0 9	48 27 6	47 53 6	47 18 7	46 42 9	46 6 7	45 29 7	44 52 0	40	20
36	50 41 0	50 12 9	49 43 8	49 13 8	48 42 6	48 10 7	47 38 0	47 4 6	46 30 4	45 55 4	45 19 7	44 43 3	44 6 3	36	24
32	49 47 7	49 20 0	48 51 5	48 22 0	47 51 5	47 20 1	46 48 0	46 15 2	45 41 6	45 7 2	44 32 2	43 56 4	43 20 1	32	28
28	48 54 0	48 27 0	47 58 8	47 29 9	47 0 0	46 29 2	45 57 6	45 25 5	44 52 4	44 18 6	43 44 3	43 9 1	42 33 5	28	32
24	48 0 2	47 33 6	47 6 0	46 37 5	46 8 1	45 37 9	45 7 0	44 35 3	44 2 9	43 29 6	42 55 9	42 21 4	41 46 3	24	36
20	47 6 1	46 40 0	46 12 8	45 44 9	45 16 0	44 46 3	44 15 9	43 44 9	43 12 9	42 40 3	42 7 1	41 33 2	40 58 8	20	40
16	46 11 9	45 46 1	45 19 5	44 52 0	44 23 6	43 54 4	43 24 5	42 54 0	42 22 7	41 50 6	41 17 9	40 44 6	40 10 8	16	44
12	45 17 4	44 52 1	44 25 8	43 58 9	43 30 9	43 2 2	42 32 8	42 2 8	41 32 1	41 0 6	40 28 4	39 55 7	39 22 4	12	48
8	44 22 7	43 57 8	43 32 0	43 5 4	42 38 0	42 9 7	41 40 8	41 11 4	40 41 1	40 10 1	39 38 6	39 6 3	38 33 5	8	52
4	43 27 9	43 3 3	42 37 9	42 11 8	41 44 8	41 17 0	40 48 6	40 19 6	39 49 8	39 19 4	38 48 4	38 16 7	37 44 4	4	2 56
21 0	42 32 9	42 8 7	41 43 7	41 17 9	40 51 4	40 24 1	39 56 2	39 27 6	38 58 3	38 28 3	37 57 8	37 26 7	36 55 0	21 0	3 0

LATITUDE 17°.													
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	60 0	0	59 0	0	58 0	0	57 0	0	56 0	0	55 0	0	0 0
23 56	59 59	0	58 59	1	57 59	1	56 59	1	55 59	2	54 59	2	4
52	59 56	1	58 56	2	57 56	4	56 56	5	55 56	6	54 56	7	8
48	59 51	3	58 51	6	57 51	8	56 52	1	55 52	3	54 52	5	12
44	59 44	5	58 45	0	57 45	5	56 45	9	55 46	3	54 46	8	16
40	59 35	8	58 36	6	57 37	4	56 38	0	55 38	7	54 39	3	20
36	59 25	2	58 26	4	57 27	4	56 28	5	55 29	4	54 30	3	24
32	59 12	9	58 14	3	57 15	8	56 17	2	55 18	5	54 19	7	28
28	58 58	6	58 0	7	57 2	5	56 4	3	55 6	0	54 7	5	32
24	58 42	7	57 45	1	56 47	5	55 49	7	54 51	8	53 53	8	36
20	58 24	9	57 28	0	56 30	9	55 33	5	54 36	1	53 38	6	40
16	58 5	6	57 9	2	56 12	6	55 15	9	54 19	0	53 21	8	44
12	57 44	6	56 48	8	55 52	8	54 56	6	54 0	3	53 3	7	48
8	57 22	1	56 26	9	55 31	5	54 35	8	53 40	1	52 44	1	52
4	56 58	0	56 3	6	55 8	8	54 13	7	53 18	6	52 23	1	0 56
23 0	56 32	5	55 38	7	54 44	6	53 50	2	52 55	6	52 0	9	1 0
22 56	56 5	4	55 12	4	54 19	0	53 25	4	52 31	5	51 37	3	4
52	55 37	2	54 44	8	53 52	2	52 59	3	52 6	0	51 12	4	8
48	55 7	6	54 16	0	53 24	1	52 31	8	51 39	2	50 46	4	12
44	54 36	8	53 46	1	52 54	8	52 3	2	51 11	3	50 19	1	16
40	54 4	8	53 14	8	52 24	3	51 33	4	50 42	2	49 50	7	20
36	53 31	6	52 42	4	51 52	7	51 2	6	50 12	1	49 21	2	24
32	52 57	4	52 8	9	51 20	0	50 30	6	49 40	9	48 50	7	28
28	52 22	1	51 34	4	50 46	2	49 57	6	49 8	6	48 19	2	32
24	51 45	9	50 58	9	50 11	6	49 23	6	48 35	3	47 46	6	36
20	51 8	6	50 22	5	49 35	8	48 48	7	48 1	1	47 13	1	40
16	50 30	6	49 45	1	48 59	3	48 12	8	47 26	0	46 38	6	44
12	49 51	6	49 7	0	48 21	8	47 36	1	46 50	4	46 3	4	48
8	49 11	8	48 27	9	47 43	5	46 58	5	46 13	2	45 27	3	52
4	48 31	3	47 48	1	47 4	4	46 20	3	45 35	5	44 50	4	1 56
22 0	47 50	0	47 7	6	46 24	6	45 41	1	44 57	1	44 12	6	2 0
21 56	47 8	0	46 26	3	45 44	1	45 1	3	44 18	0	43 34	2	4
52	46 25	3	45 44	4	45 2	8	44 20	7	43 38	1	42 55	1	8
48	45 42	0	45 1	8	44 20	9	43 39	5	42 57	4	42 15	2	12
44	44 58	1	44 18	6	43 38	4	42 57	7	42 16	5	41 34	8	16
40	44 13	7	43 34	7	42 55	3	42 15	2	41 34	7	40 53	7	20
36	43 28	6	42 50	4	42 11	6	41 32	2	40 52	4	40 12	0	24
32	42 43	1	42 5	5	41 27	4	40 48	6	40 9	4	39 29	7	28
28	41 57	1	41 20	1	40 42	6	40 4	5	39 25	9	38 46	9	32
24	41 10	5	40 34	3	39 57	4	39 19	9	38 42	0	38 3	5	36
20	40 23	6	39 47	9	39 11	6	38 34	8	37 57	5	37 19	7	40
16	39 36	2	39 1	1	38 25	4	37 49	2	37 12	5	36 35	3	44
12	38 48	3	38 13	9	37 38	8	37 3	2	36 27	1	35 50	5	48
8	38 0	2	37 26	2	36 51	8	36 16	7	35 41	2	35 5	3	52
4	37 11	6	36 38	2	36 4	3	35 29	9	34 55	0	34 19	5	2 56
21 0	36 22	6	35 49	8	35 16	5	34 42	6	34 8	3	33 33	4	3 0

TRUE ALTITUDE OF BODY.

LATITUDE 17°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
Declination																Declination	
Same Name.	Contrary Name.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.	
h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.	
15 0	21 0	42 32.9	42 8.7	41 43.7	41 17.9	40 51.4	40 24.1	39 56.2	39 27.6	38 58.3	38 28.3	37 57.8	37 26.7	36 55.0	3 0	9 0	
4	20 56	41 37.7	41 13.9	40 49.2	40 23.9	39 57.8	39 30.9	39 3.4	38 35.3	38 6.5	37 37.0	37 7.0	36 36.4	36 5.2	4	8 56	
8	52	40 42.5	40 18.9	39 54.7	39 29.7	39 3.9	38 37.5	38 10.4	37 42.8	37 14.4	36 45.4	36 15.9	35 45.7	35 15.1	8	52	
12	48	39 47.0	39 23.8	38 59.9	38 35.3	38 9.9	37 43.9	37 17.2	36 50.0	36 22.1	35 53.5	35 24.5	34 54.9	34 24.7	12	48	
16	44	38 51.5	38 28.6	38 5.0	37 40.8	37 15.8	36 50.0	36 23.8	35 57.0	35 29.6	35 1.4	34 32.9	34 3.7	33 34.0	16	44	
20	40	37 55.8	37 33.2	37 9.9	36 46.1	36 21.3	35 56.1	35 30.2	35 3.8	34 36.8	34 9.1	33 41.0	33 12.3	32 43.0	20	40	
24	36	37 0.0	36 37.7	36 14.7	35 51.1	35 26.8	35 1.9	34 36.4	34 10.4	33 43.8	33 16.5	32 48.9	32 20.6	31 51.8	24	36	
28	32	36 4.1	35 42.1	35 19.4	34 56.1	34 32.1	34 7.6	33 42.4	33 16.9	32 50.6	32 23.8	31 56.5	31 28.6	31 0.3	28	32	
32	28	35 8.1	34 46.4	34 24.0	34 1.0	33 37.3	33 13.1	32 48.3	32 23.1	31 57.2	31 30.7	31 3.9	30 36.5	30 8.6	32	28	
36	24	34 12.1	33 50.5	33 28.5	33 5.7	32 42.4	32 18.4	31 54.0	31 29.2	31 3.6	30 37.6	30 11.1	29 44.1	29 16.7	36	24	
40	20	33 15.9	32 54.6	32 32.8	32 10.3	31 47.3	31 23.7	30 59.6	30 35.0	30 9.9	29 44.2	29 18.1	28 51.5	28 24.5	40	20	
44	16	32 19.6	31 58.6	31 37.0	31 14.9	30 52.1	30 28.8	30 5.0	29 40.7	29 15.9	28 50.6	28 24.9	27 58.7	27 32.1	44	16	
48	12	31 23.3	31 2.5	30 41.1	30 19.2	29 56.7	29 33.7	29 10.2	28 46.3	28 21.8	27 56.9	27 31.6	27 5.7	26 39.6	48	12	
52	8	30 26.9	30 6.3	29 45.2	29 23.5	29 1.3	28 38.5	28 15.4	27 51.7	27 27.6	27 3.0	26 38.0	26 12.6	25 46.7	52	8	
15 56	4	29 30.4	29 10.0	28 49.1	28 27.7	28 5.6	27 43.2	27 20.3	26 57.1	26 33.3	26 9.0	25 44.4	25 19.2	24 53.8	3 56	4	
16 0	20 0	28 33.9	28 13.7	27 53.0	27 31.7	27 10.0	26 47.8	26 25.2	26 2.3	25 38.8	25 14.8	24 50.5	24 25.8	24 0.7	4 0	8 0	
4	19 56	27 37.3	27 17.3	26 56.7	26 35.8	26 14.2	25 52.3	25 30.0	25 7.3	24 44.1	24 20.4	23 56.5	23 32.1	23 7.4	4	7 56	
8	52	26 40.6	26 20.8	26 0.5	25 39.7	25 18.4	24 56.7	24 34.6	24 12.2	23 49.3	23 26.0	23 2.3	22 38.3	22 14.0	8	52	
12	48	25 43.9	25 24.2	25 4.1	24 43.5	24 22.5	24 1.0	23 39.2	23 17.0	22 54.4	22 31.4	22 8.1	21 44.4	21 20.4	12	48	
16	44	24 47.1	24 27.5	24 7.6	23 47.3	23 26.4	23 5.2	22 43.6	22 21.7	21 59.4	21 36.6	21 13.7	20 50.3	20 26.6	16	44	
20	40	23 50.3	23 30.9	23 11.1	22 51.0	22 30.4	22 9.3	21 48.0	21 26.3	21 4.3	20 41.8	20 19.1	19 56.0	19 32.7	20	40	
24	36	22 53.4	22 34.2	22 14.6	21 54.6	21 34.1	21 13.3	20 52.2	20 30.9	20 9.0	19 46.9	19 24.5	19 1.6	18 38.6	24	36	
28	32	21 56.5	21 37.4	21 17.9	20 58.1	20 37.8	20 17.2	19 56.4	19 35.3	19 13.7	18 51.8	18 29.7	18 7.2	17 44.4	28	32	
32	28	20 59.5	20 40.6	20 21.2	20 1.6	19 41.5	19 21.1	19 0.5	18 39.6	18 18.3	17 56.6	17 34.7	17 12.6	16 50.1	32	28	
36	24	20 2.5	19 43.7	19 24.5	19 5.0	18 45.1	18 24.9	18 4.5	17 43.8	17 22.7	17 1.3	16 39.8	16 17.8	15 55.7	36	24	
40	20	19 5.5	18 46.8	18 27.7	18 8.4	17 48.7	17 28.6	17 8.4	16 47.9	16 27.1	16 6.0	15 44.6	15 23.0	15 1.1	40	20	
44	16	18 8.4	17 49.8	17 30.9	17 11.7	16 52.2	16 32.3	16 12.2	15 52.0	15 31.4	15 10.5	14 49.4	14 28.0	14 6.5	44	16	
48	12	17 11.3	16 52.8	16 34.0	16 15.0	15 55.6	15 35.9	15 16.0	14 55.9	14 35.6	14 14.9	13 54.1	13 33.0	13 11.7	48	12	
52	8	16 14.2	15 55.8	15 37.1	15 18.2	14 58.9	14 39.4	14 19.7	13 59.9	13 39.7	13 19.2	12 58.7	12 37.9	12 16.9	52	8	
16 56	4	15 17.0	14 58.7	14 40.1	14 21.3	14 2.2	13 42.9	13 23.4	13 3.7	12 43.7	12 23.5	12 3.2	11 42.6	11 21.9	4 56	4	
17 0	19 0	14 19.7	14 1.6	13 43.1	13 24.4	13 5.5	12 46.3	12 27.0	12 7.4	11 47.7	11 27.7	11 7.6	10 47.3	10 26.8	5 0	7 0	
4	18 56	13 22.6	13 4.5	12 46.1	12 27.6	12 8.7	11 49.7	11 30.5	11 11.2	10 51.6	10 31.8	10 11.9	9 51.8	9 31.6	4	6 56	
8	52	12 25.4	12 7.3	11 49.1	11 30.6	11 11.9	10 52.9	10 33.9	10 14.8	9 55.4	9 35.8	9 16.2	8 56.3	8 36.3	8	52	
12	48	11 28.1	11 10.1	10 52.0	10 33.6	10 15.0	9 56.2	9 37.3	9 18.4	8 59.1	8 39.8	8 20.4	8 0.7	7 41.0	12	48	
16	44	10 30.8	10 12.9	9 54.8	9 36.6	9 18.1	8 59.5	8 40.7	8 21.9	8 2.9	7 43.7	7 24.5	7 5.1	6 45.6	16	44	
20	40	9 33.5	9 15.7	8 57.6	8 39.5	8 21.1	8 2.6	7 44.0	7 25.4	7 6.5	6 47.5	6 28.5	6 9.3	5 50.1	20	40	
24	36	8 36.2	8 18.4	8 0.5	7 42.4	7 24.1	7 5.8	6 47.3	6 28.8	6 10.1	5 51.3	5 32.5	5 13.4	4 54.5	24	36	
28	32	7 38.9	7 21.1	7 3.3	6 45.3	6 27.1	6 8.9	5 50.5	5 32.2	5 13.6	4 55.0	4 36.3	4 17.6	3 58.8	28	32	
32	28	6 41.5	6 23.8	6 6.0	5 48.1	5 30.1	5 11.9	4 53.7	4 35.5	4 17.1	3 58.6	3 40.2	3 21.6	3 3.0	32	28	
36	24	5 44.2	5 26.5	5 8.7	4 51.0	4 33.0	4 14.9	3 56.8	3 38.8	3 20.5	3 2.2	2 44.0	2 25.6	2 7.2	36	24	
40	20	4 46.9	4 29.2	4 11.5	3 53.7	3 35.8	3 17.9	2 59.9	2 41.9	2 23.9	2 5.8	1 47.7	1 29.5	1 11.3	40	20	
44	16	3 49.5	3 31.9	3 14.2	2 56.5	2 38.7	2 20.8	2 3.0	1 45.1	1 27.2	1 9.2	0 51.3	0 33.3	0 15.4	44	16	
48	12	2 52.1	2 34.5	2 16.9	1 59.3	1 41.5	1 23.7	1 6.0	0 48.3	0 30.5	0 12.7	0 5.1	0 22.9	0 40.6	48	12	
52	8	1 54.8	1 37.2	1 19.6	1 2.0	0 44.3	0 26.6	0 9.0	0 8.6	0 26.3	0 43.9	1 1.5	1 19.2	1 36.7	52	8	
17 56	4	0 57.4	0 39.8	0 22.3	0 4.7	0 12.9	0 30.5	0 48.1	1 5.6	1 23.1	1 40.6	1 58.0	2 15.5	2 32.9	5 56	4	
18 0	18 0	0 0.0	0 17.5	0 35.1	0 52.7	1 10.1	1 27.6	1 45.0	2 2.5	2 19.9	2 37.3	2 54.6	3 11.9	3 29.1	6 0	6 0	

LATITUDE 17°.															
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.	
Declination														Declination	
Same Name.	Contrary Name.	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.
h. m.	h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	h. m.
15 0	21 0	36 22.6	35 49.8	35 16.5	34 42.6	34 8.3	33 33.4	32 58.2	32 22.4	31 46.3	31 9.7	30 32.7	29 55.3	3 0	9 0
4	20 56	35 33.5	35 1.1	34 28.3	33 55.0	33 21.2	32 46.9	32 12.2	31 37.0	31 1.5	30 25.5	29 49.1	29 12.3	4	8 56
8	52	34 43.8	34 12.1	33 39.8	33 6.9	32 33.8	32 0.31	25.9	30 51.3	30 16.3	29 40.9	29 5.1	28 28.9	8	52
12	48	33 53.9	33 22.7	32 50.9	32 18.6	31 45.9	31 12.8	30 39.2	30 5.2	29 30.8	28 55.9	28 20.7	27 45.1	12	48
16	44	33 3.7	32 32.9	32 1.7	31 30.0	30 57.8	30 25.2	29 52.2	29 18.7	28 44.8	28 10.5	27 35.9	27 0.9	16	44
20	40	32 13.2	31 43.0	31 12.2	30 41.0	30 9.4	29 37.3	29 4.8	28 31.8	27 58.6	27 24.8	26 50.8	26 16.3	20	40
24	36	31 22.5	30 52.7	30 22.4	29 51.7	29 20.6	28 49.1	28 17.0	27 44.6	27 11.9	26 38.7	26 5.3	25 31.4	24	36
28	32	30 31.4	30 2.1	29 32.4	29 2.2	28 31.6	28 0.5	27 29.1	26 57.1	26 24.9	25 52.3	25 19.4	24 46.1	28	32
32	28	29 40.2	29 11.4	28 42.1	28 12.3	27 42.1	27 11.6	26 40.7	26 9.4	25 37.7	25 5.5	24 33.2	24 0.4	32	28
36	24	28 48.7	28 20.3	27 51.5	27 22.2	26 52.6	26 22.5	25 52.1	25 21.2	24 50.1	24 18.5	23 46.6	23 14.3	36	24
40	20	27 57.0	27 29.0	27 0.6	26 31.9	26 2.6	25 33.1	25 3.2	24 32.8	24 2.2	23 31.1	22 59.7	22 28.1	40	20
44	16	27 5.0	26 37.5	26 9.6	25 41.2	25 12.5	24 43.4	24 14.0	23 44.1	23 14.0	22 43.4	22 12.7	21 41.4	44	16
48	12	26 12.8	25 45.7	25 18.2	24 50.4	24 22.1	23 53.5	23 24.5	22 55.1	22 25.5	21 55.5	21 25.2	20 54.6	48	12
52	8	25 20.5	24 53.7	24 26.7	23 59.3	23 31.5	22 3.3	22 34.8	22 5.9	21 36.8	21 7.2	20 37.5	20 7.3	52	8
15 56	4	24 27.9	24 1.7	23 35.0	23 8.0	22 40.6	22 12.9	21 44.9	21 16.5	20 47.8	20 18.7	19 49.4	19 19.8	3 56	4
16 0	20 0	23 35.2	23 9.3	22 43.1	22 16.5	21 49.5	21 22.2	20 54.7	20 26.7	19 58.6	19 30.0	19 1.2	18 32.1	4 0	8 0
4	19 56	22 42.2	22 16.8	21 50.9	21 24.8	20 58.2	20 31.4	20 4.3	19 36.8	19 9.1	18 41.0	18 12.7	17 44.1	4	7 56
8	52	21 49.2	21 24.0	20 58.6	20 32.8	20 6.8	19 40.3	19 13.6	18 46.6	18 19.4	17 51.8	17 24.0	16 55.8	8	52
12	48	20 55.9	20 31.1	20 6.1	19 40.7	19 15.0	18 49.1	18 22.8	17 56.2	17 29.4	17 2.3	16 35.0	16 7.4	12	48
16	44	20 2.5	19 38.1	19 13.4	18 48.4	18 23.2	17 57.5	17 31.8	17 5.6	16 39.3	16 12.6	15 45.8	15 18.6	16	44
20	40	19 8.9	18 44.9	18 20.6	17 56.0	17 31.1	17 5.9	16 40.5	16 14.8	15 48.9	15 22.7	14 56.3	14 29.6	20	40
24	36	18 15.2	17 51.6	17 27.6	17 3.3	16 38.8	16 14.1	15 49.1	15 23.8	14 58.4	14 32.6	14 6.7	13 40.5	24	36
28	32	17 21.4	16 58.1	16 34.4	16 10.6	15 46.5	15 22.0	14 57.5	14 32.7	14 7.6	13 42.3	13 16.8	12 51.1	28	32
32	28	16 27.4	16 4.4	15 41.1	15 17.6	14 53.9	14 29.9	14 5.7	13 41.3	13 16.7	12 51.8	12 26.8	12 1.5	32	28
36	24	15 33.3	15 10.6	14 47.7	14 24.5	14 1.2	13 37.6	13 13.8	12 49.7	12 25.5	12 1.1	11 36.5	11 11.7	36	24
40	20	14 39.0	14 16.7	13 54.1	13 31.3	13 8.3	12 45.1	12 21.7	11 58.0	11 34.3	11 10.2	10 46.1	10 21.7	40	20
44	16	13 44.7	13 22.6	13 0.4	12 37.9	12 15.3	11 52.4	11 29.5	11 6.2	10 42.8	10 19.1	9 55.5	9 31.6	44	16
48	12	12 50.2	12 28.5	12 6.6	11 44.4	11 22.1	10 59.6	10 37.0	10 14.1	9 51.1	9 28.0	9 4.7	8 41.2	48	12
52	8	11 55.6	11 34.2	11 12.6	10 50.8	10 28.8	10 6.7	9 44.4	9 21.9	8 59.4	8 36.6	8 13.7	7 50.7	52	8
16 56	4	11 0.9	10 39.8	10 18.5	9 57.0	9 35.4	9 13.6	8 51.7	8 29.6	8 7.5	7 45.1	7 22.6	7 0.0	4 56	4
17 0	19 0	10 6.1	9 45.3	9 24.3	9 3.2	8 41.8	8 20.4	7 58.9	7 37.1	7 15.4	6 53.4	6 31.4	6 9.2	5 0	7 0
4	18 56	9 11.2	8 50.7	8 30.0	8 9.1	7 48.2	7 27.1	7 5.9	6 44.5	6 23.1	6 1.6	5 39.9	5 18.2	4	6 56
8	52	8 16.2	7 55.9	7 35.5	7 15.0	6 54.4	6 33.6	6 12.8	5 51.8	5 30.8	5 9.6	4 48.4	4 27.0	8	52
12	48	7 21.1	7 1.1	6 41.0	6 20.8	6 0.5	5 40.0	5 19.6	4 58.9	4 38.3	4 17.5	3 56.6	3 35.7	12	48
16	44	6 25.9	6 6.2	5 46.4	5 26.4	5 6.4	4 46.3	4 26.2	4 5.9	3 45.6	3 25.2	3 4.8	2 44.2	16	44
20	40	5 30.6	5 11.2	4 51.6	4 32.0	4 12.3	3 52.5	3 32.7	3 12.8	2 52.9	2 32.8	2 12.8	1 52.7	20	40
24	36	4 35.3	4 16.1	3 56.8	3 37.4	3 18.1	2 58.6	2 39.1	2 19.5	2 0.0	1 40.3	1 20.7	1 1.0	24	36
28	32	3 39.9	3 20.9	3 1.9	2 42.8	2 23.7	2 4.6	1 45.4	1 26.2	1 7.0	0 47.7	0 28.4	0 9.1	28	32
32	28	2 44.3	2 25.7	2 6.9	1 48.1	1 29.3	1 10.4	0 51.6	0 32.7	0 13.9	0 5.1	0 23.9	0 42.8	32	28
36	24	1 48.8	1 30.3	1 11.8	0 53.3	0 34.8	0 16.2	0 2.3	0 20.9	0 39.4	0 57.9	1 16.4	1 34.9	36	24
40	20	0 53.1	0 34.9	0 16.6	0 1.6	0 19.8	0 38.1	0 56.3	1 14.6	1 32.7	1 50.9	2 9.0	2 27.1	40	20
44	16	0 2.6	0 20.7	0 38.6	0 56.6	1 14.5	1 32.5	1 50.4	2 8.3	2 26.1	2 43.9	3 1.7	3 19.4	44	16
48	12	0 58.4	1 16.2	1 34.0	1 51.7	2 9.4	2 27.0	2 44.6	3 2.2	3 19.6	3 37.2	3 54.5	4 11.9	48	12
52	8	1 54.3	2 11.8	2 29.3	2 46.9	3 4.2	3 21.7	3 38.9	3 56.1	4 13.3	4 30.4	4 47.5	5 4.4	52	8
17 56	4	2 50.2	3 7.6	3 24.8	3 42.1	3 59.2	4 16.3	4 33.2	4 50.2	5 7.0	5 23.8	5 40.5	5 57.1	5 56	4
18 0	18 0	3 46.2	4 3.4	4 20.4	4 37.3	4 54.2	5 11.0	5 27.7	5 44.3	6 0.9	6 17.3	6 33.6	6 49.8	6 0	6 0

LATITUDE 18°.																	
Westerly		DECLINATION — same Name as — LATITUDE.													Westerly		
Hour		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Hour		
Angle.															Angle.		
h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.
24	0	72 0 0	73 0 0	74 0 0	75 0 0	76 0 0	77 0 0	78 0 0	79 0 0	80 0 0	81 0 0	82 0 0	83 0 0	84 0 0	0	0	
23	56	71 58.4	72 58.3	73 58.2	74 58.0	75 58.0	76 57.9	77 57.6	78 57.4	79 57.3	80 56.8	81 56.5	82 56.0	83 55.4	4	4	
	52	71 53.6	72 53.2	73 52.8	74 52.4	75 52.0	76 51.4	77 50.3	78 49.5	79 48.7	80 47.5	81 46.0	82 44.2	83 41.8	8	8	
	48	71 45.6	72 44.7	73 43.9	74 42.8	75 41.7	76 40.4	77 38.7	78 37.0	79 35.0	80 32.4	81 29.2	82 25.3	83 20.2	12	12	
	44	71 34.5	72 33.0	73 31.6	74 29.9	75 27.8	76 25.4	77 22.8	78 19.6	79 16.3	80 11.7	81 6.5	82 0.0	82 51.8	16	16	
	40	71 20.4	72 18.2	73 15.9	74 13.2	75 10.2	76 6.6	77 2.6	77 58.0	78 52.9	79 46.5	80 38.6	81 29.3	82 17.8	20	20	
	36	71 3.5	72 0.4	72 57.0	73 53.3	74 49.2	75 44.3	76 38.8	77 32.5	78 25.3	79 17.0	80 6.4	80 54.3	81 39.5	24	24	
	32	70 43.7	71 39.7	72 35.2	73 30.4	74 24.9	75 18.6	76 11.4	77 3.4	77 54.1	78 43.5	79 30.5	80 15.4	80 57.7	28	28	
	28	70 21.4	71 16.3	72 10.8	73 4.6	73 57.6	74 49.8	75 40.8	76 31.0	77 19.8	78 6.9	78 51.3	79 34.0	80 13.0	32	32	
	24	69 56.5	70 50.2	71 43.5	72 36.0	73 27.6	74 18.1	75 7.7	75 55.8	76 42.6	77 27.3	78 9.5	78 49.9	79 26.5	36	36	
	20	69 29.4	70 21.8	71 13.8	72 4.9	72 55.1	73 44.1	74 31.8	75 18.2	76 3.1	76 45.8	77 25.8	78 3.6	78 37.9	40	40	
	16	69 0.0	69 51.4	70 41.9	71 31.6	72 20.5	73 7.9	73 53.8	74 38.3	75 21.3	76 2.0	76 40.2	77 15.8	77 48.2	44	44	
	12	68 28.6	69 18.7	70 8.0	70 56.3	71 43.6	72 29.5	73 13.8	73 56.6	74 37.7	75 16.6	75 52.9	76 26.9	76 57.1	48	48	
	8	67 55.4	68 44.2	69 32.2	70 19.2	71 4.9	71 49.2	72 31.9	73 13.3	73 52.8	74 29.9	75 4.5	75 36.7	76 5.5	52	52	
	4	67 20.4	68 8.0	68 54.7	69 40.2	70 24.6	71 7.4	71 48.8	72 28.5	73 6.3	73 42.0	74 14.8	74 45.6	75 12.9	56	56	
23	0	66 43.8	67 30.1	68 15.5	68 59.8	69 42.8	70 24.3	71 4.1	71 42.3	72 18.8	72 52.9	73 24.3	73 53.6	74 19.6	1	0	
22	56	66 5.6	66 50.9	67 34.9	68 18.0	68 59.7	69 39.8	70 18.3	70 55.1	71 29.9	72 2.9	72 33.1	73 1.0	73 25.8	4	4	
	52	65 26.2	66 10.2	66 53.2	67 34.8	68 15.4	68 54.2	69 31.4	70 6.9	70 40.5	71 12.0	71 41.0	72 7.8	72 31.8	8	8	
	48	64 45.4	65 28.3	66 10.2	66 50.7	67 29.8	68 7.5	68 43.5	69 17.8	69 50.4	70 20.5	70 48.4	71 14.4	71 37.2	12	12	
	44	64 3.5	64 45.2	65 26.0	66 5.3	66 43.5	67 19.9	67 54.7	68 28.0	68 59.2	69 28.5	69 55.4	70 20.2	70 42.3	16	16	
	40	63 20.5	64 1.2	64 40.8	65 19.2	65 56.2	66 31.5	67 5.3	67 37.3	68 7.6	68 35.9	69 1.9	69 25.8	69 47.2	20	20	
	36	62 36.5	63 16.2	63 54.8	64 32.0	65 8.0	65 42.4	66 15.1	66 46.0	67 15.5	67 42.9	68 7.9	68 31.3	68 51.8	24	24	
	32	61 51.6	62 30.4	63 7.9	63 44.2	64 19.2	64 52.5	65 24.2	65 54.5	66 22.8	66 49.4	67 13.7	67 36.2	67 56.4	28	28	
	28	61 5.9	61 43.6	62 20.4	62 55.7	63 29.6	64 1.9	64 32.9	65 2.2	65 29.8	65 55.6	66 19.2	66 41.2	67 0.5	32	32	
	24	60 19.4	60 56.2	61 32.0	62 6.4	62 39.4	63 10.9	63 41.0	64 9.5	64 36.4	65 1.5	65 24.4	65 45.7	66 4.6	36	36	
	20	59 32.2	60 8.2	60 43.0	61 16.4	61 48.8	62 19.6	62 48.7	63 16.5	63 42.6	64 7.1	64 29.4	64 50.1	65 8.5	40	40	
	16	58 44.3	59 19.4	59 53.3	60 26.2	60 57.6	61 27.6	61 56.1	62 23.1	62 48.6	63 12.3	63 34.1	63 54.3	64 12.3	44	44	
	12	57 55.8	58 30.1	59 3.3	59 35.3	60 5.9	60 35.2	61 3.1	61 29.4	61 54.2	62 17.4	62 38.6	62 58.5	63 16.2	48	48	
	8	57 6.7	57 40.3	58 12.8	58 43.9	59 13.9	59 42.5	60 9.7	60 35.4	60 59.7	61 22.3	61 43.0	62 2.4	62 19.8	52	52	
	4	56 17.1	56 49.9	57 21.6	57 52.2	58 21.6	58 49.5	59 16.0	59 41.1	60 4.8	60 26.9	60 47.4	61 6.3	61 23.3	56	56	
22	0	55 27.0	55 59.1	56 30.1	57 0.1	57 28.8	57 56.1	58 22.0	58 46.6	59 9.8	59 31.6	59 51.5	60 10.0	60 26.7	2	0	
21	56	54 36.5	55 7.9	55 38.4	56 7.6	56 35.6	57 2.4	57 27.8	57 51.9	58 14.7	58 35.9	58 55.5	59 13.7	59 30.1	4	4	
	52	53 45.5	54 16.3	54 46.2	55 14.8	55 42.2	56 8.4	56 33.3	56 57.0	57 19.3	57 39.9	57 59.3	58 17.3	58 33.4	8	8	
	48	52 54.2	53 24.4	53 53.6	54 21.6	54 48.6	55 14.2	55 38.7	56 1.9	56 23.8	56 44.2	57 3.1	57 20.7	57 36.7	12	12	
	44	52 2.5	52 32.1	53 0.7	53 28.2	53 54.6	54 19.9	54 43.7	55 6.5	55 28.1	55 48.2	56 6.8	56 24.2	56 39.9	16	16	
	40	51 10.5	51 39.5	52 7.5	52 34.5	53 0.5	53 25.3	53 48.7	54 11.0	54 32.2	54 52.1	55 10.4	55 27.6	55 43.0	20	20	
	36	50 18.1	50 46.6	51 14.2	51 40.6	52 6.1	52 30.4	52 53.5	53 15.5	53 36.3	53 55.9	54 13.9	54 30.8	54 46.3	24	24	
	32	49 25.5	49 53.4	50 20.5	50 46.6	51 11.6	51 35.4	51 58.1	52 19.8	52 40.3	52 59.5	53 17.3	53 34.1	53 49.3	28	28	
	28	48 32.5	49 0.4	49 26.6	49 52.2	50 16.9	50 40.3	51 2.6	51 23.9	51 44.1	52 3.1	52 20.7	52 37.3	52 52.4	32	32	
	24	47 39.4	48 6.3	48 32.5	48 57.7	49 21.9	49 45.0	50 7.0	50 28.0	50 47.8	51 6.6	51 24.1	51 40.4	51 55.5	36	36	
	20	46 45.9	47 12.5	47 38.2	48 3.0	48 26.8	48 49.5	49 11.2	49 31.9	49 51.5	50 10.0	50 27.4	50 43.6	50 58.5	40	40	
	16	45 52.2	46 18.4	46 43.7	47 8.0	47 31.5	47 54.0	48 15.3	48 35.8	48 55.2	49 13.5	49 30.5	49 46.8	50 1.5	44	44	
	12	44 58.4	45 24.1	45 49.1	46 13.1	46 36.2	46 58.3	47 19.4	47 39.5	47 58.8	48 16.9	48 33.8	48 49.8	49 4.4	48	48	
	8	44 4.3	44 29.7	44 54.3	45 17.9	45 40.7	46 2.5	46 23.3	46 43.2	47 2.3	47 20.3	47 36.9	47 52.8	48 7.4	52	52	
	4	43 10.0	43 35.0	43 59.3	44 22.6	44 45.1	45 6.6	45 27.2	45 46.9	46 5.7	46 23.5	46 40.1	46 55.9	47 10.4	56	56	
21	0	42 15.6	42 40.2	43 4.1	43 27.1	43 49.3	44 10.6	44 31.0	44 50.4	45 9.0	45 26.6	45 43.2	45 58.9	46 13.4	3	0	

LATITUDE 18°.															
Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.		
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°			
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	°	'
24 0	85 0	0	86 0	0	87 0	0	88 0	0	89 0	0	90 0	0	0 0	0	0
23 56	84 54	5	85 53	2	86 51	1	87 46	9	88 37	1	89 2	9	88 3	55	7
52	84 38	5	85 33	7	86 26	3	87 13	9	87 50	8	88 5	9	87 39	6	3
48	84 13	4	85 4	1	85 50	6	86 30	2	86 58	1	87 8	8	86 31	8	3
44	83 41	3	84 27	1	85 7	8	85 41	0	86 3	3	86 11	8	85 43	3	8
40	83 3	4	83 44	8	84 20	7	84 49	0	85 7	6	85 14	6	85 9	2	8
36	82 21	4	82 58	9	83 30	7	83 55	4	84 11	5	84 17	6	84 13	3	8
32	81 36	2	82 10	3	82 38	9	83 0	8	83 14	9	83 20	5	83 17	2	8
28	80 48	7	81 19	9	81 45	8	82 5	6	82 18	3	82 23	5	82 21	0	8
24	79 59	4	80 28	1	80 51	8	81 9	8	81 21	5	81 26	4	81 24	5	8
20	79 9	0	79 35	6	79 57	3	80 13	7	80 29	3	80 27	8	80 20	4	8
16	78 17	1	78 41	9	79 1	8	79 17	6	79 27	8	79 32	7	79 31	4	8
12	77 24	5	77 47	9	78 6	7	78 21	2	78 31	0	78 35	6	78 34	8	8
8	76 31	1	76 52	9	77 10	8	77 24	7	77 33	9	77 38	4	77 38	2	8
4	75 37	2	75 57	8	76 15	0	76 27	9	76 36	8	76 41	4	76 41	5	8
23 0	74 42	7	75 2	7	75 18	6	75 31	1	75 39	8	75 44	4	75 44	9	8
22 56	73 48	0	74 7	0	74 22	3	74 34	3	74 42	8	74 47	5	74 48	0	8
52	72 52	9	73 11	1	73 25	9	73 37	5	73 45	7	73 50	4	73 51	3	8
48	71 57	5	72 15	0	72 29	4	72 40	7	72 48	7	72 53	3	72 54	6	8
44	71 2	0	71 18	9	71 32	8	71 43	7	71 51	6	71 56	4	71 57	7	8
40	70 6	2	70 22	7	70 36	0	70 46	7	70 54	5	70 59	4	71 1	2	8
36	69 10	3	69 26	2	69 39	2	69 49	7	69 57	4	70 2	5	70 4	4	8
32	68 14	1	68 29	5	68 42	4	68 52	7	69 0	5	69 5	6	69 7	7	8
28	67 17	9	67 32	9	67 45	5	67 55	7	68 3	5	68 8	5	68 11	0	8
24	66 21	5	66 36	3	66 48	5	66 58	6	67 6	4	67 11	6	67 14	2	8
20	65 25	1	65 39	5	65 51	7	66 1	6	66 9	3	66 14	7	66 17	5	8
16	64 28	6	64 42	8	64 54	7	65 4	6	65 12	2	65 17	7	65 20	8	8
12	63 32	0	63 45	9	63 57	7	64 7	4	64 15	2	64 20	7	64 24	1	8
8	62 35	4	62 49	0	63 0	6	63 10	5	63 18	2	63 23	9	63 27	3	8
4	61 38	6	61 52	1	62 3	6	62 13	3	62 21	2	62 26	9	62 30	7	8
22 0	60 41	8	60 55	2	61 6	6	61 16	2	61 24	1	61 30	1	61 34	0	8
21 56	59 45	0	59 58	2	60 9	6	60 19	2	60 27	1	60 33	2	60 37	4	8
52	58 48	1	59 1	5	59 12	4	59 22	1	59 30	1	59 36	3	59 40	7	8
48	57 51	2	58 4	1	58 15	4	58 25	1	58 33	1	58 39	6	58 44	1	8
44	56 54	3	57 7	1	57 18	3	57 28	0	57 36	2	57 42	8	57 47	5	8
40	55 57	3	56 10	1	56 21	3	56 31	0	56 39	3	56 45	9	56 50	9	8
36	55 0	3	55 13	0	55 24	3	55 34	0	55 42	3	55 49	0	55 54	3	8
32	54 3	4	54 16	0	54 27	2	54 37	0	54 45	3	54 52	3	54 57	7	8
28	53 6	4	53 19	0	53 30	1	53 39	9	53 48	6	53 55	6	54 1	2	8
24	52 9	3	52 21	9	52 33	0	52 43	0	52 51	6	52 58	9	53 4	6	8
20	51 12	3	51 24	8	51 36	0	51 46	0	51 54	8	52 2	1	52 8	2	8
16	50 15	3	50 27	8	50 39	0	50 49	1	50 57	9	51 5	5	51 11	7	8
12	49 18	2	49 30	6	49 42	0	49 52	1	50 1	5	50 8	8	50 15	2	8
8	48 21	1	48 33	7	48 44	9	48 55	2	49 4	3	49 12	1	49 18	8	8
4	47 24	0	47 36	6	47 48	0	47 58	2	48 7	4	48 15	5	48 22	4	8
21 0	46 27	0	46 39	5	46 51	0	47 1	3	47 10	6	47 18	9	47 25	9	8

LATITUDE 18°.																	
Westerly Hour Angle.		DECLINATION — same Name as — LATITUDE.														Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°			
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	
21 0	42 15.6	42 40.2	43 4.1	43 27.1	43 49.3	44 10.6	44 31.0	44 50.4	45 9.0	45 26.6	45 43.2	45 58.9	46 13.4	46 27.8	46 41.9	3 0	
20 56	41 21.0	41 45.2	42 8.8	42 31.5	42 53.5	43 14.5	43 34.7	43 53.9	44 12.3	44 29.8	44 46.2	45 1.9	45 16.4	45 30.8	45 44.9	4	
52	40 26.2	40 50.2	41 13.4	41 35.9	41 57.6	42 18.3	42 38.3	42 57.4	43 15.6	43 33.0	43 49.3	44 4.8	44 19.3	44 34.2	44 48.2	8	
48	39 31.4	39 54.9	40 17.9	40 40.1	41 1.6	41 22.1	41 41.8	42 0.7	42 18.9	42 36.1	42 52.3	43 7.8	43 22.3	43 37.2	43 51.2	12	
44	38 36.3	38 59.6	39 22.3	39 44.2	40 5.4	40 25.7	40 45.3	41 4.1	41 22.1	41 39.2	41 55.4	42 10.8	42 25.2	42 40.1	42 54.1	16	
40	37 41.1	38 4.1	38 26.6	38 48.2	39 9.2	39 29.3	39 48.7	40 7.3	40 25.2	40 42.3	40 58.4	41 13.8	41 28.1	41 42.4	41 56.4	20	
36	36 45.7	37 8.6	37 30.8	37 52.1	38 12.9	38 32.9	38 52.1	39 10.6	39 28.4	39 45.3	40 1.3	40 16.7	40 31.1	40 45.4	40 59.4	24	
32	35 50.4	36 12.9	36 34.8	36 56.0	37 16.6	37 36.3	37 55.4	38 13.8	38 31.5	38 48.3	39 4.3	39 19.6	39 34.0	39 48.2	39 62.2	28	
28	34 54.9	35 17.1	35 38.8	35 59.8	36 20.2	36 39.8	36 58.7	37 17.0	37 34.5	37 51.3	38 7.3	38 22.5	38 37.0	38 51.2	39 5.2	32	
24	33 59.3	34 21.3	34 42.8	35 3.5	35 23.7	35 43.2	36 2.0	36 20.0	36 37.6	36 54.3	37 10.1	37 25.5	37 39.9	37 54.2	38 8.2	36	
20	33 3.5	33 25.3	33 46.6	34 7.2	34 27.2	34 46.5	35 5.2	35 23.2	35 40.6	35 57.2	36 13.1	36 28.4	36 42.8	36 57.1	37 11.1	40	
16	32 7.7	32 29.3	32 50.3	33 10.8	33 30.7	33 49.8	34 8.3	34 26.3	34 43.6	35 0.2	35 16.0	35 31.3	35 45.8	35 60.1	36 14.1	44	
12	31 11.9	31 33.1	31 54.1	32 14.3	32 34.0	32 53.1	33 11.5	33 29.3	33 46.6	34 3.1	34 18.9	34 34.3	34 48.8	34 63.2	35 17.7	48	
8	30 15.9	30 37.0	30 57.7	31 17.8	31 37.3	31 56.3	32 14.6	32 32.4	32 49.5	33 6.1	33 21.9	33 37.2	33 51.8	34 6.4	34 21.4	52	
4	29 19.8	29 40.8	30 1.2	30 21.2	30 40.6	30 59.4	31 17.7	31 35.4	31 52.5	32 9.1	32 24.8	32 40.2	32 54.7	33 9.1	33 24.1	3 56	
20 0	28 23.6	28 44.4	29 4.8	29 24.6	29 43.8	30 2.6	30 20.7	30 38.3	30 55.5	31 12.0	31 27.8	31 43.1	31 57.8	32 12.5	32 27.0	4 0	
19 56	27 27.4	27 48.0	28 8.3	28 27.9	28 47.1	29 5.7	29 23.8	29 41.3	29 58.4	30 15.0	30 30.7	30 46.1	31 0.8	31 15.5	31 30.0	4	
52	26 31.1	26 51.6	27 11.6	27 31.2	27 50.2	28 8.8	28 26.8	28 44.3	29 1.3	29 17.9	29 33.7	29 49.1	30 3.9	30 19.6	30 34.9	8	
48	25 34.8	25 55.1	26 15.0	26 34.4	26 53.4	27 11.9	27 29.8	27 47.3	28 4.3	28 20.8	28 36.7	28 52.2	29 7.0	29 22.7	29 37.7	12	
44	24 38.4	24 58.6	25 18.3	25 37.6	25 56.5	26 14.9	26 32.8	26 50.2	27 7.3	27 23.7	27 39.6	27 55.2	28 10.0	28 25.3	28 40.1	16	
40	23 41.9	24 1.9	24 21.6	24 40.9	24 59.6	25 17.9	25 35.7	25 53.2	26 10.2	26 26.7	26 42.6	26 58.1	27 13.1	27 28.4	27 43.4	20	
36	22 45.4	23 5.3	23 24.8	23 44.0	24 2.7	24 20.9	24 38.8	24 56.1	25 13.1	25 29.7	25 45.6	26 1.2	26 16.2	26 31.5	26 46.5	24	
32	21 48.9	22 8.6	22 28.1	22 47.0	23 5.8	23 23.9	23 41.7	23 59.1	24 16.1	24 32.6	24 48.6	25 4.3	25 19.4	25 34.7	25 49.7	28	
28	20 52.3	21 11.9	21 31.2	21 50.1	22 8.7	22 26.9	22 44.7	23 2.0	23 19.0	23 35.6	23 51.6	24 7.4	24 22.6	24 37.9	24 52.9	32	
24	19 55.6	20 15.1	20 34.3	20 53.2	21 11.8	21 29.8	21 47.6	22 5.0	22 22.0	22 38.6	22 54.7	23 10.5	23 25.8	23 41.1	23 56.1	36	
20	18 59.0	19 18.3	19 37.5	19 56.3	20 14.8	20 32.8	20 50.5	21 7.9	21 24.9	21 41.5	21 57.7	22 13.6	22 29.0	22 44.4	22 59.4	40	
16	18 2.2	18 21.5	18 40.6	18 59.4	19 17.7	19 35.7	19 53.5	20 10.8	20 27.9	20 44.6	21 0.8	21 16.8	21 32.3	21 47.7	21 62.7	44	
12	17 5.5	17 24.6	17 43.7	18 2.3	18 20.7	18 38.7	18 56.4	19 13.8	19 30.8	19 47.6	20 3.9	20 19.9	20 35.5	20 51.0	21 6.5	48	
8	16 8.7	16 27.9	16 46.7	17 5.3	17 23.6	17 41.6	17 59.3	18 16.7	18 33.9	18 50.6	19 7.0	19 23.1	19 38.8	19 54.4	20 9.9	52	
4	15 11.9	15 30.9	15 49.8	16 8.3	16 26.6	16 44.5	17 2.3	17 19.7	17 36.8	17 53.7	18 10.1	18 26.4	18 42.2	18 57.9	19 13.9	4 56	
19 0	14 15.0	14 34.0	14 52.8	15 11.3	15 29.5	15 47.5	16 5.2	16 22.7	16 39.9	16 56.8	17 13.2	17 29.6	17 45.6	17 61.0	17 76.4	5 0	
18 56	13 18.1	13 37.0	13 55.8	14 14.2	14 32.5	14 50.4	15 8.1	15 25.6	15 42.9	15 59.8	16 16.4	16 32.9	16 48.9	16 64.3	16 79.7	4	
52	12 21.2	12 40.0	12 58.7	13 17.2	13 35.4	13 53.4	14 11.1	14 28.6	14 45.9	15 3.0	15 19.7	15 36.2	15 52.4	16 8.6	16 24.0	8	
48	11 24.3	11 43.0	12 1.7	12 20.1	12 38.4	12 56.3	13 14.1	13 31.6	13 49.0	14 6.1	14 22.9	14 39.6	14 55.8	15 11.9	15 28.1	12	
44	10 27.4	10 46.1	11 4.7	11 23.1	11 41.3	11 59.3	12 17.0	12 34.7	12 52.1	13 9.3	13 26.2	13 43.0	13 59.4	14 15.7	14 32.1	16	
40	9 30.4	9 49.0	10 7.6	10 26.0	10 44.2	11 2.3	11 20.1	11 37.7	11 55.3	12 12.5	12 29.5	12 46.4	13 2.9	13 19.2	13 35.6	20	
36	8 33.4	8 52.0	9 10.5	9 28.9	9 47.2	10 5.2	10 23.1	10 40.8	10 58.3	11 15.7	11 32.8	11 49.8	12 6.5	12 23.0	12 39.7	24	
32	7 36.4	7 55.0	8 13.5	8 31.9	8 50.1	9 8.2	9 26.1	9 43.9	10 1.6	10 19.0	10 36.2	10 53.3	11 10.2	11 26.9	11 43.6	28	
28	6 39.4	6 57.9	7 16.4	7 34.8	7 53.1	8 11.2	8 29.1	8 47.0	9 4.7	9 22.3	9 39.5	9 56.9	10 13.8	10 30.6	10 47.9	32	
24	5 42.4	6 0.8	6 19.4	6 37.8	6 56.1	7 14.2	7 32.2	7 50.1	8 7.9	8 25.6	8 43.0	9 0.4	9 17.6	9 34.9	9 52.1	36	
20	4 45.3	5 3.8	5 22.3	5 40.7	5 59.0	6 17.2	6 35.2	6 53.2	7 11.2	7 28.9	7 46.5	8 4.1	8 21.3	8 38.6	8 55.8	40	
16	3 48.2	4 6.7	4 25.2	4 43.7	5 2.0	5 20.3	5 38.4	5 56.4	6 14.5	6 32.3	6 50.0	7 7.7	7 25.2	7 42.7	7 60.2	44	
12	2 51.2	3 9.7	3 28.2	3 46.6	4 5.0	4 23.3	4 41.5	4 59.7	5 17.8	5 35.8	5 53.6	6 11.4	6 29.1	6 46.9	6 64.6	48	
8	1 54.1	2 12.6	2 31.1	2 49.6	3 8.0	3 26.3	3 44.7	4 2.9	4 21.1	4 39.2	4 57.2	5 15.2	5 33.0	5 50.7	5 68.5	52	
4	0 57.1	1 15.6	1 34.1	1 52.6	2 11.0	2 29.5	2 47.8	3 6.2	3 24.5	3 42.8	4 0.8	4 19.0	4 37.0	4 54.9	4 72.9	5 56	
18 0	0 0.0	0 18.5	0 37.1	0 55.6	1 14.1	1 32.6	1 51.0	2 9.5	2 27.9	2 46.3	3 4.5	3 22.8	3 41.0	3 59.4	3 77.9	6 0	

LATITUDE 18°.

Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
21 0	46 27.0	46 39.5	46 51.0	47 1.3	47 10.6	47 18.9	47 25.9	47 31.8	47 36.6	47 40.3	47 42.7	47 44.1	3 0
20 56	45 29.9	45 42.5	45 53.9	46 4.4	46 13.9	46 22.2	46 29.5	46 35.7	46 40.7	46 44.8	46 47.5	46 49.3	4
52	44 32.9	44 45.5	44 57.0	45 7.5	45 17.1	45 25.6	45 33.1	45 39.5	45 44.9	45 49.2	45 52.3	45 54.5	8
48	43 35.8	43 48.5	44 0.1	44 10.7	44 20.4	44 29.2	44 36.8	44 43.4	44 49.0	44 53.7	44 57.2	44 59.7	12
44	42 38.8	42 51.5	43 3.1	43 13.9	43 23.7	43 32.6	43 40.5	43 47.4	43 53.2	43 58.2	44 2.1	44 4.9	16
40	41 41.7	41 54.4	42 6.2	42 17.1	42 27.1	42 36.2	42 44.2	42 51.3	42 57.4	43 2.7	43 6.9	43 10.2	20
36	40 44.7	40 57.5	41 9.3	41 20.3	41 30.5	41 39.7	41 47.9	41 55.2	42 1.7	42 7.3	42 11.8	42 15.4	24
32	39 47.7	40 0.5	40 12.4	40 23.6	40 33.8	40 43.3	40 51.7	40 59.3	41 5.9	41 11.9	41 16.7	41 20.7	28
28	38 50.6	39 3.6	39 15.6	39 26.8	39 37.2	39 46.8	39 55.6	40 3.3	40 10.3	40 16.4	40 21.6	40 26.0	32
24	37 53.6	38 6.6	38 18.7	38 30.1	38 40.6	38 50.5	38 59.3	39 7.5	39 14.6	39 21.1	39 26.5	39 31.3	36
20	36 56.7	37 9.7	37 21.9	37 33.4	37 44.1	37 54.1	38 3.2	38 11.5	38 19.0	38 25.7	38 31.6	38 36.6	40
16	35 59.6	36 12.8	36 25.1	36 36.8	36 47.7	36 57.8	37 7.1	37 15.6	37 23.4	37 30.5	37 36.5	37 42.0	44
12	35 2.7	35 15.9	35 28.3	35 40.1	35 51.2	36 1.5	36 11.0	36 19.8	36 27.8	36 35.1	36 41.7	36 47.4	48
8	34 5.7	34 19.1	34 31.6	34 43.5	34 54.7	35 5.2	35 15.0	35 24.0	35 32.2	35 39.9	35 46.7	35 52.8	52
4	33 8.8	33 22.2	33 34.9	33 46.9	33 58.3	34 9.0	34 19.0	34 28.2	34 36.8	34 44.7	34 51.8	34 58.3	3 56
20 0	32 11.9	32 25.4	32 38.2	32 50.3	33 1.9	33 12.8	33 23.0	33 32.5	33 41.3	33 49.5	33 56.9	34 3.7	4 0
19 56	31 15.0	31 28.6	31 41.5	31 53.8	32 5.6	32 16.6	32 27.1	32 36.8	32 45.9	32 54.4	33 2.1	33 9.2	4
52	30 18.1	30 31.8	30 44.8	30 57.3	31 9.2	31 20.5	31 31.1	31 41.1	31 50.5	31 59.3	32 7.4	32 14.8	8
48	29 21.3	29 35.0	29 48.2	30 0.8	30 13.0	30 24.4	30 35.3	30 45.5	30 55.1	31 4.2	31 12.6	31 20.5	12
44	28 24.5	28 38.3	28 51.6	29 4.4	29 16.7	29 28.4	29 39.4	29 49.9	29 59.8	30 9.2	30 17.9	30 26.1	16
40	27 27.7	27 41.6	27 55.1	28 8.0	28 20.5	28 32.3	28 43.6	28 54.4	29 4.6	29 14.2	29 23.3	29 31.8	20
36	26 30.9	26 45.0	26 58.6	27 11.7	27 24.3	27 36.4	27 47.9	27 58.9	28 9.4	28 19.3	28 28.6	28 37.5	24
32	25 34.1	25 48.4	26 2.1	26 15.4	26 28.1	26 40.4	26 52.2	27 3.4	27 14.2	27 24.5	27 34.1	27 43.2	28
28	24 37.4	24 51.7	25 5.6	25 19.1	25 32.0	25 44.6	25 56.6	26 8.1	26 19.0	26 29.6	26 39.5	26 49.0	32
24	23 40.7	23 55.2	24 9.2	24 22.8	24 36.0	24 48.8	25 1.0	25 12.7	25 23.9	25 34.8	25 45.1	25 54.9	36
20	22 44.0	22 58.6	23 12.8	23 26.6	23 40.0	23 53.0	24 5.4	24 17.4	24 28.9	24 40.0	24 50.6	25 0.8	40
16	21 47.4	22 2.2	22 16.5	22 30.5	22 44.0	22 57.2	23 9.9	23 22.1	23 33.9	23 45.3	23 56.3	24 6.8	44
12	20 50.8	21 5.7	21 20.2	21 34.4	21 48.1	22 1.4	22 14.4	22 26.9	22 39.0	22 50.7	23 2.0	23 12.9	48
8	19 54.3	20 9.3	20 24.0	20 38.3	20 52.3	21 5.8	21 19.0	21 31.8	21 44.2	21 56.2	22 7.7	22 18.9	52
4	18 57.7	19 13.0	19 27.7	19 42.2	19 56.4	20 10.2	20 23.6	20 36.7	20 49.3	21 1.7	21 13.5	21 25.0	4 56
19 0	18 1.2	18 16.6	18 31.6	18 46.3	19 0.6	19 14.7	19 28.3	19 41.7	19 54.6	20 7.2	20 19.4	20 31.3	5 0
18 56	17 4.8	17 20.3	17 35.4	17 50.3	18 4.9	18 19.2	18 33.1	18 46.7	18 59.9	19 12.8	19 25.3	19 37.5	4
52	16 8.3	16 24.0	16 39.4	16 54.4	17 9.3	17 23.8	17 37.9	17 51.7	18 5.2	18 18.5	18 31.3	18 43.9	8
48	15 12.0	15 27.8	15 43.3	15 58.6	16 13.6	16 28.4	16 42.8	16 56.9	17 10.6	17 24.2	17 37.4	17 50.2	12
44	14 15.6	14 31.6	14 47.3	15 2.9	15 18.1	15 33.0	15 47.7	16 2.1	16 16.1	16 30.0	16 43.5	16 56.7	16
40	13 19.3	13 35.5	13 51.4	14 7.1	14 22.6	14 37.8	14 52.7	15 7.3	15 21.7	15 35.9	15 49.7	16 3.3	20
36	12 23.1	12 39.5	12 55.5	13 11.4	13 27.1	13 42.6	13 57.7	14 12.7	14 27.3	14 41.8	14 55.9	15 9.9	24
32	11 26.9	11 43.5	11 59.7	12 15.8	12 31.7	12 47.4	13 2.9	13 18.1	13 33.0	13 47.9	14 2.3	14 16.5	28
28	10 30.8	10 47.4	11 3.9	11 20.2	11 36.4	11 52.4	12 8.0	12 23.6	12 38.8	12 53.9	13 8.7	13 23.4	32
24	9 34.6	9 51.5	10 8.2	10 24.8	10 41.1	10 57.3	11 13.3	11 29.1	11 44.7	12 0.1	12 15.2	12 30.2	36
20	8 38.6	8 55.6	9 12.5	9 29.3	9 45.9	10 2.4	10 18.6	10 34.7	10 50.5	11 6.3	11 21.8	11 37.2	40
16	7 42.6	7 59.9	8 16.9	8 33.9	8 50.8	9 7.5	9 24.0	9 40.4	9 56.6	10 12.6	10 28.5	10 44.2	44
12	6 46.6	7 4.1	7 21.4	7 38.6	7 55.8	8 12.7	8 29.5	8 46.2	9 2.6	9 19.1	9 35.2	9 51.3	48
8	5 50.8	6 8.4	6 25.9	6 43.4	7 0.7	7 18.0	7 35.1	7 52.0	8 8.8	8 25.6	8 42.1	8 58.5	52
4	4 54.9	5 12.8	5 30.6	5 48.2	6 5.9	6 23.3	6 40.7	6 58.0	7 15.1	7 32.2	7 49.0	8 5.8	5 56
18 0	3 59.1	4 17.2	4 35.2	4 53.1	5 11.0	5 28.8	5 46.5	6 4.0	6 21.5	6 38.9	6 56.1	7 13.2	6 0

LATITUDE 18°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.			
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°			12°	
h. m.		°	'	°	'	°	'	°	'	°	'	°	'	°	'	h. m.	
24	0	72	0 0	71	0 0	70	0 0	69	0 0	68	0 0	67	0 0	66	0 0	0	0
23	56	71	58 4	70	58 4	69	58 6	68	58 6	67	58 7	66	58 7	65	58 8	4	8
	52	71	53 6	70	53 9	69	54 2	68	54 5	67	54 7	66	54 9	65	55 1	8	12
	48	71	45 6	70	46 3	69	47 0	68	47 5	67	48 1	66	48 5	65	49 0	12	16
	44	71	34 5	70	35 7	69	37 0	68	38 0	67	38 8	66	39 8	65	40 7	16	20
	40	71	20 4	70	22 4	69	24 2	68	25 7	67	27 2	66	28 5	65	29 8	20	24
	36	71	3 5	70	6 2	69	8 7	68	10 9	67	13 1	66	15 0	65	16 7	24	28
	32	70	43 7	69	47 4	68	50 6	67	53 7	66	56 5	65	59 1	64	1 5	28	32
	28	70	21 4	69	26 0	68	30 3	67	34 1	66	37 7	65	41 0	64	44 0	32	36
	24	69	56 5	69	2 2	68	7 4	67	12 3	66	16 6	65	20 7	64	24 5	36	
	20	69	29 4	68	36 0	67	42 3	66	48 1	65	53 4	64	58 4	63	7 2	40	44
	16	69	0 0	68	8 0	67	15 2	66	21 9	65	28 3	64	34 1	63	39 5	44	48
	12	68	28 6	67	37 6	66	46 1	65	53 9	65	1 2	64	7 9	63	14 2	48	52
	8	67	55 4	67	5 6	66	15 2	65	24 0	64	32 2	63	39 9	62	47 1	52	56
	4	67	20 4	66	31 8	65	42 5	64	52 3	64	1 6	63	10 2	62	18 3	0	
23	0	66	43 8	65	56 3	65	8 1	64	19 1	63	29 4	62	39 0	61	48 1	1	0
22	56	66	5 6	65	19 4	64	32 2	63	44 3	62	55 6	62	6 3	61	16 2	4	4
	52	65	26 2	64	41 0	63	55 0	63	8 1	62	20 5	61	32 1	60	43 0	8	8
	48	64	45 4	64	1 4	63	16 5	62	30 7	61	43 9	60	56 5	60	8 4	12	12
	44	64	3 5	63	20 5	62	36 7	61	51 8	61	6 3	60	19 7	59	32 6	16	16
	40	63	20 5	62	38 7	61	55 7	61	12 0	60	27 3	59	41 8	58	55 6	20	20
	36	62	36 5	61	55 6	61	13 8	60	30 9	59	47 3	59	2 8	58	17 4	24	24
	32	61	51 6	61	11 8	60	30 9	59	49 0	59	6 2	58	22 6	57	38 1	28	28
	28	61	5 9	60	27 0	59	47 1	59	6 1	58	24 2	57	41 4	56	58 0	32	32
	24	60	19 4	59	41 4	59	2 3	58	22 3	57	41 3	56	59 5	56	16 8	36	36
	20	59	32 2	58	55 1	58	16 9	57	37 6	56	57 7	56	16 6	55	34 8	40	40
	16	58	44 3	58	8 0	57	30 6	56	52 4	56	13 1	55	32 9	54	52 0	44	44
	12	57	55 8	57	20 3	56	43 8	56	6 3	55	27 8	54	48 5	54	8 4	48	48
	8	57	6 7	56	32 0	55	56 3	55	19 6	54	42 0	54	3 4	53	24 1	52	52
	4	56	17 1	55	43 1	55	8 2	54	32 3	53	55 4	53	17 7	52	39 0	56	56
22	0	55	27 0	54	53 8	54	19 5	53	44 3	53	8 3	52	31 2	51	53 4	2	0
21	56	54	36 5	54	4 0	53	30 4	52	55 9	52	20 5	51	44 2	51	7 1	4	4
	52	53	45 5	53	13 6	52	40 9	52	7 0	51	32 2	50	56 6	50	20 3	8	8
	48	52	54 2	52	23 0	51	50 7	51	17 6	50	43 5	50	8 6	49	32 9	12	12
	44	52	2 5	51	31 8	51	0 2	50	27 7	49	54 3	49	20 1	48	45 0	16	16
	40	51	10 5	50	40 5	50	9 3	49	37 4	49	4 7	48	31 1	47	56 6	20	20
	36	50	18 1	49	48 6	49	18 2	48	46 8	48	14 7	47	41 5	47	7 8	24	24
	32	49	25 5	48	56 4	48	26 6	47	55 9	47	24 2	46	51 9	46	18 5	28	28
	28	48	32 5	48	4 0	47	34 7	47	4 5	46	33 5	46	1 6	45	28 9	32	32
	24	47	39 4	47	11 3	46	42 5	46	12 8	45	42 3	45	11 0	44	38 9	36	36
	20	46	45 9	46	18 4	45	50 0	45	20 8	44	50 8	44	20 1	43	48 5	40	40
	16	45	52 2	45	25 2	44	57 3	44	28 5	43	59 1	43	28 8	42	57 8	44	44
	12	44	58 4	44	31 7	44	4 3	43	36 1	43	7 0	42	37 2	42	6 7	48	48
	8	44	4 3	43	38 1	43	11 1	42	43 3	42	14 7	41	45 4	41	15 4	52	52
	4	43	10 0	42	44 2	42	17 6	41	50 2	41	22 2	40	53 3	40	23 8	56	56
21	0	42	15 6	41	50 2	41	23 9	40	57 0	40	29 3	40	0 9	39	31 9	3	0

LATITUDE 18°.													
Westerly Hour Angle.	DECLINATION — <i>contrary Name to</i> — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	59 0-0	58 0-0	57 0-0	56 0-0	55 0-0	54 0-0	53 0-0	52 0-0	51 0-0	50 0-0	49 0-0	48 0-0	0 0
23 56	58 59-1	57 59-2	56 59-1	55 59-2	54 59-2	53 59-3	52 59-2	51 59-3	50 59-2	49 59-3	48 59-3	47 59-3	4
52	58 56-3	57 56-5	56 56-4	55 56-5	54 56-7	53 56-9	52 56-9	51 56-9	50 57-0	49 57-1	48 57-2	47 57-3	8
48	58 51-6	57 51-9	56 52-0	55 52-3	54 52-5	53 52-9	52 53-0	51 53-2	50 53-3	49 53-5	48 53-7	47 53-9	12
44	58 45-0	57 45-5	56 45-9	55 46-4	54 46-8	53 47-2	52 47-6	51 47-9	50 48-2	49 48-5	48 48-8	47 49-1	16
40	58 36-6	57 37-4	56 38-0	55 38-7	54 39-3	53 40-0	52 40-5	51 41-1	50 41-6	49 42-1	48 42-5	47 43-0	20
36	58 26-5	57 27-5	56 28-4	55 29-5	54 30-3	53 31-8	52 32-1	51 32-8	50 33-5	49 34-2	48 34-9	47 35-6	24
32	58 14-5	57 16-0	56 17-1	55 18-5	54 19-7	53 21-0	52 22-1	51 23-1	50 24-0	49 25-1	48 26-0	47 26-8	28
28	58 0-7	57 2-6	56 4-2	55 5-9	54 7-5	53 9-2	52 10-5	51 11-8	50 13-2	49 14-4	48 15-6	47 16-8	32
24	57 45-2	56 47-6	55 49-7	54 51-8	53 53-8	52 55-7	51 57-6	50 59-3	50 0-9	49 2-5	48 4-0	47 5-5	36
20	57 28-1	56 31-0	55 33-5	54 36-2	53 38-6	52 40-9	51 43-1	50 45-3	49 47-2	48 49-2	47 51-1	46 52-9	40
16	57 9-4	56 12-8	55 15-8	54 18-9	53 21-8	52 24-7	51 27-3	50 29-8	49 32-2	48 34-6	47 36-9	46 39-0	44
12	56 49-0	55 53-0	54 56-6	54 0-2	53 3-7	52 7-0	51 10-1	50 13-1	49 15-9	48 18-8	47 21-3	46 23-9	48
8	56 27-1	55 31-8	54 35-9	53 40-2	52 44-1	51 47-9	50 51-6	49 55-0	48 58-3	48 1-5	47 4-6	46 7-5	52
4	56 3-8	55 8-9	54 13-9	53 18-6	52 23-1	51 27-5	50 31-6	49 35-7	48 39-4	47 43-1	46 46-6	45 50-1	0 56
23 0	55 38-9	54 44-9	53 50-3	52 55-7	52 0-9	51 5-9	50 10-5	49 15-0	48 19-3	47 23-5	46 27-5	45 31-4	1 0
22 56	55 12-8	54 19-4	53 25-5	52 31-5	51 37-3	50 42-9	49 48-1	48 53-1	47 57-9	47 2-7	46 7-2	45 11-6	4
52	54 45-2	53 52-5	52 59-4	52 6-0	51 12-4	50 18-6	49 24-4	48 30-0	47 35-4	46 40-7	45 45-8	44 50-6	8
48	54 16-4	53 24-4	52 32-0	51 39-4	50 46-4	49 53-1	48 59-6	48 5-8	47 11-8	46 17-6	45 23-2	44 28-6	12
44	53 46-4	52 55-1	52 3-4	51 11-4	50 19-1	49 26-5	48 33-6	47 40-5	46 47-0	45 53-4	44 59-5	44 5-5	16
40	53 15-2	52 24-7	51 33-6	50 42-3	49 50-7	48 58-8	48 6-6	47 13-9	46 21-2	45 28-1	44 34-8	43 41-3	20
36	52 42-9	51 53-1	51 2-8	50 12-1	49 21-2	48 30-0	47 38-4	46 46-4	45 54-2	45 1-8	44 9-1	43 16-2	24
32	52 9-4	51 20-4	50 30-8	49 40-9	48 50-7	48 0-1	47 9-2	46 17-9	45 26-3	44 34-4	43 42-4	42 50-0	28
28	51 35-0	50 46-6	49 57-8	49 8-7	48 19-2	47 29-3	46 38-9	45 48-3	44 57-3	44 6-2	43 14-6	42 22-9	32
24	50 59-5	50 12-0	49 23-8	48 35-4	47 46-6	46 57-4	46 7-7	45 17-8	44 27-5	43 36-9	42 46-0	41 54-8	36
20	50 23-1	49 36-3	48 49-0	48 1-2	47 13-1	46 24-6	45 35-6	44 46-3	43 56-6	43 6-7	42 16-5	41 25-9	40
16	49 45-8	48 59-8	48 13-1	47 26-2	46 38-6	45 50-9	45 2-6	44 13-9	43 24-9	42 35-7	41 46-0	40 56-1	44
12	49 7-7	48 22-3	47 36-4	46 50-1	46 3-4	45 16-3	44 28-7	43 40-7	42 52-4	42 3-7	41 14-7	40 25-4	48
8	48 28-8	47 44-1	46 58-9	46 13-4	45 27-3	44 40-9	43 53-9	43 6-6	42 18-9	41 31-0	40 42-6	39 54-0	52
4	47 49-0	47 5-1	46 20-6	45 35-7	44 50-4	44 4-5	43 18-4	42 31-7	41 44-7	40 57-4	40 9-7	39 21-6	1 56
22 0	47 8-4	46 25-3	45 41-5	44 57-3	44 12-6	43 27-6	42 42-0	41 56-1	41 9-7	40 23-1	39 36-0	38 48-6	2 0
21 56	46 27-2	45 44-8	45 1-6	44 18-2	43 34-2	42 49-8	42 5-0	41 19-6	40 34-0	39 47-9	39 1-5	38 14-8	4
52	45 45-3	45 3-5	44 21-1	43 38-4	42 55-1	42 11-3	41 27-2	40 42-6	39 57-5	39 12-1	38 26-3	37 40-2	8
48	45 2-7	44 21-6	43 39-9	42 57-8	42 15-2	41 32-3	40 48-7	40 4-7	39 20-3	38 35-5	37 50-5	37 4-9	12
44	44 19-5	43 39-2	42 58-1	42 16-7	41 34-8	40 52-5	40 9-5	39 26-1	38 42-4	37 58-4	37 13-9	36 29-0	16
40	43 35-8	42 56-1	42 15-7	41 35-0	40 53-7	40 12-0	39 29-7	38 47-1	38 3-9	37 20-5	36 36-7	35 52-5	20
36	42 51-9	42 12-4	41 32-7	40 52-7	40 12-0	39 30-9	38 49-3	38 7-3	37 24-8	36 42-0	35 58-8	35 15-3	24
32	42 6-7	41 28-3	40 49-2	40 9-7	39 29-7	38 49-3	38 8-3	37 26-9	36 45-1	36 3-0	35 20-4	34 37-4	28
28	41 21-3	40 43-6	40 5-1	39 26-2	38 46-9	38 7-1	37 26-7	36 46-0	36 4-8	35 23-3	34 41-3	33 59-0	32
24	40 35-5	39 58-3	39 20-5	38 42-2	38 3-5	37 24-4	36 44-6	36 4-5	35 24-0	34 43-1	34 1-8	33 20-0	36
20	39 49-2	39 12-6	38 35-4	37 57-8	37 19-7	36 41-1	36 2-1	35 22-5	34 42-5	34 2-3	33 21-6	32 40-4	40
16	39 2-3	38 26-4	37 49-8	37 12-8	36 35-3	35 57-4	35 18-9	34 40-0	34 0-7	33 21-0	32 40-8	32 0-4	44
12	38 15-2	37 39-8	37 3-8	36 27-4	35 50-5	35 13-2	34 35-3	33 57-0	33 18-3	32 39-1	31 59-7	31 19-8	48
8	37 27-7	36 52-8	36 17-4	35 41-6	35 5-3	34 28-5	33 51-2	33 13-5	32 35-3	31 56-9	31 18-0	30 38-7	52
4	36 39-7	36 5-4	35 30-6	34 55-3	34 19-5	33 43-4	33 6-7	32 29-5	31 52-0	31 14-1	30 35-8	29 57-2	2 56
21 0	35 51-4	35 17-6	34 43-3	34 8-6	33 33-4	32 57-8	32 21-7	31 45-2	31 8-2	30 30-9	29 53-2	29 15-2	3 0

LATITUDE 18°.																					
Westerly Hour Angle.				DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>												Westerly Hour Angle.					
Declination																Declination					
Same Name.		Contrary Name.		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Contrary Name.	Same Name.			
h.	m.	h.	m.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	h.	m.	h.	m.
15	0	21	0	42	15.6	41	50.2	41	23.9	40	57.0	40	29.3	40	0.9	39	31.9	39	2.2	38	31.9
	4	20	56	41	21.0	40	56.0	40	30.1	40	3.5	39	36.3	39	8.4	38	39.8	38	10.5	37	40.6
	8		52	40	26.2	40	1.5	39	36.0	39	9.9	38	43.1	38	15.5	37	47.4	37	18.5	36	49.2
	12		48	39	31.4	39	6.8	38	41.8	38	16.0	37	49.6	37	22.4	36	54.7	36	26.4	35	57.4
	16		44	38	36.3	38	12.2	37	47.4	37	22.0	36	55.9	36	29.2	35	61.8	35	33.9	34	64.3
	20		40	37	41.1	37	17.3	36	52.9	36	27.8	35	68.3	35	35.7	34	79.3	34	41.3	33	92.3
	24		36	36	45.8	36	22.4	35	58.2	35	33.4	35	8.0	34	42.1	33	15.5	33	48.4	32	20.8
	28		32	35	50.4	35	27.2	35	3.3	34	38.9	34	13.9	33	48.2	33	22.1	32	55.3	32	28.1
	32		28	34	54.9	34	31.9	34	8.4	33	44.3	33	19.5	32	54.3	32	28.4	32	2.1	31	35.2
	36		24	33	59.3	33	36.6	33	13.3	32	49.5	32	25.1	32	0.1	31	34.7	31	8.6	30	42.1
	40		20	33	3.5	32	41.1	32	18.1	31	54.6	31	30.5	31	5.8	30	40.6	30	15.0	29	48.8
	44		16	32	7.7	31	45.5	31	22.8	30	59.5	30	35.8	30	11.4	29	46.5	29	21.2	28	55.4
	48		12	31	11.9	30	49.9	30	27.4	30	4.3	29	40.8	29	16.8	28	52.3	28	27.2	28	1.8
	52		8	30	15.9	29	54.1	29	31.9	29	9.0	28	45.8	28	22.1	27	57.8	27	33.1	27	8.0
15	56		4	29	19.8	28	58.2	28	36.2	28	13.7	27	50.7	27	27.2	27	3.3	26	38.9	26	14.1
16	0	20	0	28	23.6	28	2.3	27	40.5	27	18.2	26	55.4	26	32.2	26	8.5	25	44.5	25	20.1
	4	19	56	27	27.4	27	6.3	26	44.7	26	22.6	26	0.1	25	37.1	25	13.8	24	50.0	24	25.8
	8		52	26	31.1	26	10.2	25	48.8	25	27.0	25	4.7	24	41.9	24	18.9	23	55.3	23	31.4
	12		48	25	34.8	25	14.0	24	52.8	24	31.2	24	9.1	23	46.7	23	23.8	23	0.6	22	37.0
	16		44	24	38.4	24	17.8	23	56.8	23	35.3	23	13.5	22	51.3	22	28.6	22	5.6	21	42.4
	20		40	23	41.9	23	21.4	23	0.6	22	39.4	22	17.7	21	55.8	21	33.4	21	10.7	20	47.7
	24		36	22	45.4	22	25.1	22	4.4	21	43.4	21	22.0	21	0.2	20	38.1	20	15.6	19	52.8
	28		32	21	48.9	21	28.7	21	8.2	20	47.3	20	26.1	20	4.5	19	42.6	19	20.4	18	57.9
	32		28	20	52.3	20	32.2	20	11.9	19	51.1	19	30.1	19	8.8	18	47.1	18	25.1	18	2.8
	36		24	19	55.6	19	35.7	19	15.5	18	55.0	18	34.1	18	12.9	17	51.5	17	29.7	17	7.7
	40		20	18	59.0	18	39.1	18	19.1	17	58.7	17	38.0	17	17.0	16	55.7	16	34.2	16	12.4
	44		16	18	2.2	17	42.6	17	22.6	17	2.4	16	41.9	16	21.0	16	0.0	15	38.6	15	17.1
	48		12	17	5.5	16	45.9	16	26.1	16	6.0	15	45.6	15	25.0	15	4.1	14	43.0	14	21.6
	52		8	16	8.7	15	49.3	15	29.5	15	9.5	14	49.3	14	28.9	14	8.1	13	47.2	13	26.1
16	56		4	15	11.9	14	52.5	14	32.9	14	13.0	13	53.0	13	32.7	13	12.2	12	51.4	12	30.5
17	0	19	0	14	15.0	13	55.8	13	36.2	13	16.5	12	56.6	12	36.5	12	16.1	11	55.6	11	34.8
	4	18	56	13	18.1	12	58.9	12	39.6	12	19.9	12	0.2	11	40.1	11	20.0	10	59.6	10	39.1
	8		52	12	21.2	12	2.1	11	42.8	11	23.4	11	3.7	10	43.8	10	23.8	10	3.6	9	43.2
	12		48	11	24.3	11	5.3	10	46.1	10	26.7	10	7.2	9	47.4	9	27.5	9	7.5	8	47.3
	16		44	10	27.4	10	8.4	9	49.2	9	30.0	9	10.6	8	51.0	8	31.2	8	11.4	7	51.4
	20		40	9	30.4	9	11.4	8	52.4	8	33.2	8	13.9	7	54.5	7	34.9	7	15.2	6	55.4
	24		36	8	33.4	8	14.6	7	55.6	7	36.5	7	17.2	6	57.9	6	38.5	6	19.0	5	59.3
	28		32	7	36.4	7	17.6	6	58.7	6	39.7	6	20.6	5	61.3	5	42.0	5	22.6	4	63.6
	32		28	6	39.4	6	20.6	5	61.8	5	42.9	5	23.9	4	64.8	4	45.5	4	26.2	3	67.6
	36		24	5	42.4	5	23.6	4	64.9	4	46.0	4	27.1	3	68.0	3	49.0	3	29.8	2	71.7
	40		20	4	45.3	4	26.6	3	67.9	3	49.1	3	30.3	2	71.4	2	52.4	2	33.4	1	75.3
	44		16	3	48.2	3	29.6	2	70.9	2	52.2	2	33.5	1	74.6	1	55.8	1	36.9	0	79.1
	48		12	2	51.2	2	32.6	1	73.9	1	55.2	1	36.6	0	78.0	0	59.1	0	40.3	0	82.6
	52		8	1	54.1	1	35.6	0	77.9	0	58.3	0	39.7	0	81.0	0	62.4	0	43.8	0	86.3
17	56		4	0	57.1	0	38.5	0	81.9	0	61.3	0	42.7	0	84.0	0	65.8	0	47.3	0	90.0
18	0	18	0	0	0.0	0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0	14.1	0	32.6	0	15.1	0	15.1	0	2.9	0	27.9
				0	18.6	0	37.1	0	55.6	0											

LATITUDE 18°.																	
Westerly Hour Angle.		DECLINATION — <i>contrary Name to</i> — LATITUDE. <i>same Name as</i>														Westerly Hour Angle.	
		Declination															
Same Name.		Contrary Name.		13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Contrary Name.	Same Name.
h. m.	h. m.	h. m.	h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.	h. m.
15 0	21 0	35 51.4	35 17.6	34 43.3	34 8.6	33 33.4	32 57.8	32 21.7	31 45.2	31 8.2	30 30.9	29 53.2	29 15.2	28 32.7	27 49.8	3 0	9 0
4	20 56	35 2.7	34 29.5	33 55.7	33 21.6	32 46.9	32 11.8	31 36.3	31 0.4	30 24.0	29 47.3	29 10.2	28 32.7	27 49.8	27 6.5	4 8 56	8 56
8	52	34 13.7	33 41.0	33 7.8	32 34.1	32 0.0	31 25.6	30 50.5	30 15.1	29 39.4	29 3.2	28 26.7	27 49.8	27 6.5	26 22.8	8 52	8 52
12	48	33 21.3	32 52.2	32 19.4	31 46.3	31 12.8	30 38.8	30 4.4	29 29.6	28 54.3	28 18.8	27 42.8	27 6.5	26 22.8	25 58.5	12 48	12 48
16	44	32 34.7	32 3.0	31 30.8	30 58.2	30 25.2	29 51.8	29 17.9	28 43.6	28 8.9	27 33.9	26 58.5	26 22.8	25 58.5	25 28.7	16 44	16 44
20	40	31 44.8	31 13.5	30 41.9	30 9.8	29 37.3	29 4.4	28 31.0	27 57.3	27 23.1	26 48.7	26 13.8	25 38.7	25 15.2	24 54.2	20 40	20 40
24	36	30 54.5	30 23.8	29 52.6	29 21.0	28 49.1	28 16.6	27 43.8	27 10.5	26 37.0	26 3.1	25 28.8	24 54.2	24 30.9	24 6.6	24 36	24 36
28	32	30 4.0	29 33.8	29 3.0	28 32.0	28 0.5	27 28.6	26 56.3	26 23.6	25 50.5	25 17.2	24 43.4	24 9.3	23 58.5	23 35.3	28 32	28 32
32	28	29 13.3	28 43.5	28 13.2	27 42.6	27 11.6	26 40.2	26 8.5	25 36.3	25 3.7	24 30.9	23 57.6	23 24.1	22 51.5	22 28.7	32 28	32 28
36	24	28 22.3	27 53.0	27 23.1	26 53.0	26 22.5	25 51.6	25 20.3	24 48.7	24 16.6	23 44.3	23 11.5	22 38.6	22 5.2	21 52.7	36 24	36 24
40	20	27 31.0	27 2.2	26 32.8	26 3.1	25 33.1	25 2.7	24 31.9	24 0.7	23 29.2	22 57.8	22 25.2	21 52.7	21 28.7	21 5.2	40 20	40 20
44	16	26 39.5	26 11.1	25 42.2	25 13.0	24 43.4	24 13.5	23 43.1	23 12.4	22 41.4	22 10.2	21 38.5	21 6.6	20 51.5	20 20.1	44 16	44 16
48	12	25 47.9	25 19.8	24 51.4	24 22.6	23 53.5	23 24.0	22 54.1	22 23.9	21 53.4	21 22.6	20 51.5	20 20.1	19 58.3	19 33.3	48 12	48 12
52	8	24 56.0	24 28.4	24 0.3	23 32.0	23 3.3	22 34.3	22 4.9	21 35.2	21 5.1	20 34.9	20 4.2	19 33.3	18 58.3	18 46.2	52 8	52 8
15 56	4	24 3.9	23 36.7	23 9.1	22 41.1	22 12.9	21 44.3	21 15.4	20 46.1	20 16.6	19 46.8	19 16.6	18 46.2	18 23.8	17 58.9	3 56	4
16 0	20 0	23 11.6	22 44.8	22 17.6	21 50.1	21 22.2	20 54.2	20 25.6	19 56.9	19 27.8	18 58.5	18 28.8	17 58.9	17 35.3	17 11.3	4 0	8 0
4	19 56	22 19.1	21 52.7	21 25.9	20 58.8	20 31.4	20 3.7	19 35.7	19 7.3	18 38.7	18 9.9	17 40.7	17 11.3	16 52.4	16 23.5	4 56	7 56
8	52	21 26.5	21 0.4	20 33.9	20 7.3	19 40.3	19 13.1	18 45.5	18 17.6	17 49.4	17 21.0	16 52.4	16 23.5	15 58.3	15 28.7	8 52	8 52
12	48	20 33.6	20 7.9	19 41.9	19 15.6	18 49.0	18 22.2	17 55.1	17 27.6	16 59.9	16 32.0	16 3.8	15 35.4	14 58.3	14 27.1	12 48	12 48
16	44	19 40.6	19 15.3	18 49.6	18 23.8	17 57.5	17 31.2	17 4.4	16 37.4	16 10.1	15 42.7	15 15.0	14 47.1	14 23.8	13 58.5	16 44	16 44
20	40	18 47.5	18 22.5	17 57.2	17 31.7	17 5.9	16 39.9	16 13.6	15 47.0	15 20.2	14 53.2	14 26.0	13 58.5	13 35.3	13 11.3	20 40	20 40
24	36	17 54.1	17 29.6	17 4.6	16 39.5	16 14.1	15 48.5	15 22.5	14 56.4	14 30.0	14 3.5	13 36.7	13 9.7	12 51.5	12 20.6	24 36	24 36
28	32	17 0.7	16 36.5	16 11.9	15 47.1	15 22.0	14 56.8	14 31.4	14 5.6	13 39.7	13 13.6	12 47.2	12 20.6	11 58.3	11 31.4	28 32	28 32
32	28	16 7.1	15 43.2	15 19.0	14 54.6	14 29.9	14 5.1	13 40.0	13 14.6	12 49.1	12 23.4	11 57.5	11 31.4	11 5.2	10 42.0	32 28	32 28
36	24	15 13.4	14 49.8	14 25.9	14 1.9	13 37.6	13 13.1	12 48.4	12 23.5	11 58.3	11 33.0	11 7.6	10 42.0	10 17.5	9 52.4	36 24	36 24
40	20	14 19.5	13 56.2	13 32.7	13 9.0	12 45.1	12 21.0	11 56.7	11 32.1	11 7.4	10 42.6	10 17.5	9 52.4	9 27.3	9 2.5	40 20	40 20
44	16	13 25.5	13 2.6	12 39.3	12 16.0	11 52.4	11 28.7	11 4.8	10 40.6	10 16.3	9 51.9	9 27.3	9 2.5	8 36.8	8 12.6	44 16	44 16
48	12	12 31.5	12 8.8	11 45.9	11 22.8	10 59.6	10 36.2	10 12.7	9 48.9	9 25.0	9 1.0	8 36.8	8 12.6	7 58.3	7 28.7	48 12	48 12
52	8	11 37.2	11 14.9	10 52.3	10 29.6	10 6.7	9 43.7	9 20.4	8 57.1	8 33.6	8 10.0	7 46.3	7 22.4	7 0.0	6 41.5	52 8	52 8
16 56	4	10 42.9	10 20.9	9 58.5	9 36.1	9 13.6	8 50.9	8 28.1	8 5.1	7 42.0	7 18.9	6 55.5	6 32.0	6 8.3	5 41.5	4 56	4
17 0	19 0	9 48.5	9 26.7	9 4.7	8 42.6	8 20.4	7 58.1	7 35.6	7 13.0	6 50.2	6 27.5	6 4.5	5 41.5	5 18.4	5 0.0	5 0	7 0
4	18 56	8 53.9	8 32.4	8 10.7	7 49.0	7 27.1	7 5.1	6 43.0	6 20.7	5 58.3	5 35.9	5 13.4	4 50.8	4 27.1	4 3.8	4 56	6 56
8	52	7 59.2	7 38.0	7 16.6	6 55.2	6 33.6	6 12.0	5 50.2	5 28.3	5 6.3	4 44.3	4 22.1	4 0.0	3 38.8	3 16.3	8 52	8 52
12	48	7 4.5	6 43.5	6 22.4	6 1.3	5 40.0	5 18.8	4 57.3	4 35.7	4 14.1	3 52.5	3 30.8	3 8.9	2 58.3	2 35.8	12 48	12 48
16	44	6 9.6	5 48.9	5 28.1	5 7.3	4 46.3	4 25.3	4 4.3	3 43.1	3 21.8	3 0.6	2 39.2	2 17.8	2 0.0	1 41.5	16 44	16 44
20	40	5 14.7	4 54.2	4 33.7	4 13.1	3 52.5	3 31.9	3 11.1	2 50.2	2 29.4	2 8.5	1 47.5	1 26.5	1 5.2	0 44.1	20 40	20 40
24	36	4 19.7	3 59.5	3 39.2	3 19.0	2 58.6	2 38.3	2 17.8	1 57.3	1 36.8	1 16.3	0 55.7	0 35.1	0 14.1	0 0.0	24 36	24 36
28	32	3 24.5	3 4.7	2 44.6	2 24.6	2 4.6	1 44.5	1 24.4	1 4.3	0 44.1	0 24.0	0 3.7	0 16.5	0 0.0	0 0.0	28 32	28 32
32	28	2 29.3	2 9.7	1 49.9	1 30.2	1 10.4	0 50.8	0 30.9	0 11.1	0 8.7	0 28.6	0 48.3	1 8.1	1 0.0	0 0.0	32 28	32 28
36	24	1 34.0	1 14.7	0 55.1	0 35.7	0 16.2	0 3.2	0 22.7	0 42.2	1 1.7	1 21.1	1 40.5	1 59.9	2 0.0	2 0.0	36 24	36 24
40	20	0 38.7	0 19.5	0 0.2	0 18.9	0 38.1	0 57.2	1 16.4	1 35.6	1 54.8	2 13.8	2 32.9	2 51.9	3 0.0	3 0.0	40 20	40 20
44	16	0 16.8	0 35.7	0 54.7	1 13.6	1 32.5	1 51.3	2 10.3	2 29.1	2 47.9	3 6.6	3 25.3	3 43.9	4 0.0	4 0.0	44 16	44 16
48	12	1 12.2	1 30.9	1 49.7	2 8.4	2 27.0	2 45.6	3 4.1	3 22.7	3 41.2	3 59.5	4 17.9	4 36.1	5 0.0	5 0.0	48 12	48 12
52	8	2 7.8	2 26.3	2 44.8	3 3.2	3 21.6	3 39.9	3 58.1	4 16.3	4 34.5	4 52.5	5 10.5	5 28.4	6 0.0	6 0.0	52 8	52 8
17 56	4	3 3.5	3 21.7	3 40.0	3 58.2	4 16.3	4 34.3	4 52.3	5 10.1	5 27.9	5 45.6	6 3.3	6 20.8	7 0.0	7 0.0	5 56	4
18 0	18 0	3 59.1	4 17.2	4 35.3	4 53.2	5 11.0	5 28.7	5 46.4	6 4.0	6 21.5	6 38.9	6 56.1	7 13.2	8 0.0	8 0.0	6 0	6 0

LATITUDE 19°.															
Westerly Hour Angle.		DECLINATION — <i>same Name as</i> — LATITUDE.												Westerly Hour Angle.	
		0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°		
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h. m.
24 0	71 0 0	72 0 0	73 0 0	74 0 0	75 0 0	76 0 0	77 0 0	78 0 0	79 0 0	80 0 0	81 0 0	82 0 0	83 0 0	0 0	0
23 56	70 58.5	71 58.4	72 58.1	73 58.1	74 58.2	75 58.1	76 57.8	77 57.6	78 57.5	79 57.2	80 56.9	81 56.5	82 56.0	4	4
52	70 53.9	71 53.6	72 53.0	73 52.8	74 52.5	75 51.9	76 51.3	77 50.5	78 49.7	79 48.8	80 47.6	81 46.2	82 44.4	8	8
48	70 46.4	71 45.7	72 44.5	73 43.8	74 42.9	75 41.9	76 40.7	77 39.0	78 37.4	79 35.2	80 32.6	81 29.5	82 25.5	12	12
44	70 36.0	71 35.0	72 33.1	73 31.5	74 30.0	75 28.0	76 25.7	77 23.1	78 20.2	79 16.5	80 12.1	81 7.0	82 0.5	16	16
40	70 22.6	71 20.9	72 18.4	73 16.1	74 13.8	75 10.5	76 7.1	77 3.2	78 58.7	79 53.3	80 47.0	81 39.4	82 30.1	20	20
36	70 6.5	71 4.0	72 0.6	73 57.4	74 53.8	75 49.6	76 44.9	77 39.5	78 33.4	79 26.1	80 17.9	81 7.5	82 55.3	24	24
32	69 47.8	70 44.4	71 40.0	72 35.8	73 31.1	74 25.6	75 19.3	76 12.2	77 4.1	78 55.0	79 44.7	80 31.8	81 17.0	28	28
28	69 26.5	70 22.2	71 16.6	72 11.2	73 5.3	74 58.5	75 50.8	76 42.0	77 32.2	78 20.7	79 8.2	80 52.9	81 35.6	32	32
24	69 2.9	69 57.4	70 51.0	71 44.1	72 36.8	73 28.7	74 19.3	75 9.0	76 57.1	77 44.0	78 29.0	79 11.5	80 51.8	36	36
20	68 37.0	69 30.5	70 22.7	71 14.7	72 6.1	73 56.5	74 45.5	75 33.3	76 19.9	77 6.4	78 47.7	79 27.7	80 7.8	40	40
16	68 8.9	69 1.2	69 52.3	70 43.0	71 33.0	72 21.8	73 9.3	74 55.5	75 40.3	76 23.3	77 4.2	78 42.5	79 18.4	44	44
12	67 38.8	68 30.0	69 19.8	70 9.3	71 57.9	72 45.2	73 31.2	74 15.7	75 58.9	76 40.1	77 19.4	78 55.6	79 29.6	48	48
8	67 6.9	67 56.9	68 45.6	69 33.6	70 20.9	71 6.8	72 51.3	73 34.3	74 15.7	75 55.2	76 32.8	77 7.4	78 39.6	52	52
4	66 33.2	67 22.0	68 9.5	69 56.4	70 42.2	71 26.7	72 9.8	73 51.3	74 31.2	75 9.0	76 45.0	77 18.1	78 49.0	0 56	0 56
23 0	65 57.9	66 45.7	67 32.0	68 17.4	69 2.0	69 45.1	70 26.8	71 6.9	72 45.3	73 21.7	74 56.2	75 27.8	76 57.2	1 0	1 0
22 56	65 21.2	66 7.6	67 52.8	68 37.0	69 20.4	69 2.3	69 42.5	70 21.3	71 58.3	72 33.4	73 6.5	74 36.7	75 4.9	4	4
52	64 43.0	65 28.4	66 12.3	67 55.5	68 37.5	69 18.2	68 57.2	69 34.5	70 10.4	71 44.1	72 16.0	73 45.0	74 12.0	8	8
48	64 3.5	64 47.8	65 30.7	66 12.6	67 53.5	68 32.9	69 10.7	68 47.0	69 21.5	70 54.1	71 24.8	72 52.8	73 18.8	12	12
44	63 22.9	64 6.1	64 47.8	65 28.8	66 8.5	66 46.7	67 23.4	67 58.5	68 31.9	69 3.3	69 32.9	70 0.0	71 25.2	16	16
40	62 41.1	63 23.3	64 4.0	64 43.7	65 22.5	65 59.6	66 35.3	67 9.1	67 41.6	68 12.0	68 40.6	69 6.8	70 31.0	20	20
36	61 58.4	62 39.5	63 19.1	63 57.9	64 35.5	65 11.8	65 46.3	66 19.3	66 50.6	67 20.2	67 48.0	68 13.1	69 36.6	24	24
32	61 14.6	61 54.8	62 33.5	63 11.3	63 47.9	64 23.0	64 56.7	65 28.7	65 59.2	66 27.8	66 54.7	67 19.3	68 42.0	28	28
28	60 30.0	61 9.3	61 47.0	62 23.9	62 59.5	63 33.7	64 6.4	64 37.6	65 7.3	65 35.1	66 1.1	66 24.9	67 47.2	32	32
24	59 44.6	60 23.0	60 59.9	61 35.7	62 10.5	62 43.8	63 15.7	63 46.1	64 14.9	64 41.9	65 7.3	65 30.5	66 51.9	36	36
20	58 58.4	59 36.0	60 11.9	60 47.0	61 20.9	61 53.5	62 24.5	62 54.0	63 22.0	63 48.4	64 13.2	64 35.7	65 56.6	40	40
16	58 11.5	58 48.2	59 23.4	59 57.6	60 30.8	61 2.6	61 32.8	62 1.7	62 28.9	62 54.7	63 18.8	63 40.7	64 1.2	44	44
12	57 24.1	57 59.9	58 34.3	59 7.8	59 40.2	60 11.1	60 40.7	61 8.7	61 35.5	62 0.5	62 24.0	62 45.6	63 5.6	48	48
8	56 36.0	57 11.0	57 44.7	58 17.5	58 49.0	59 19.4	59 48.2	60 15.7	60 41.7	61 6.2	61 29.2	61 50.2	62 9.9	52	52
4	55 47.3	56 21.6	56 54.6	57 26.6	57 57.5	58 27.1	58 55.4	59 22.2	59 47.7	60 11.7	60 34.2	60 54.8	61 14.0	1 56	1 56
22 0	54 58.2	55 31.8	56 4.0	56 35.3	57 5.6	57 34.7	58 2.2	58 28.5	58 53.5	59 16.9	59 39.0	59 59.2	60 18.1	2 0	2 0
21 56	54 8.5	54 41.4	55 13.0	55 43.7	56 13.4	56 41.8	57 8.8	57 34.5	57 59.0	58 22.1	58 43.7	59 3.5	59 22.0	4	4
52	53 18.4	53 50.7	54 21.6	54 51.7	55 20.8	55 48.5	56 15.1	56 40.3	57 4.4	57 26.9	57 48.2	58 7.7	58 25.9	8	8
48	52 27.9	53 59.5	54 30.0	54 59.4	55 27.8	55 55.1	56 21.1	56 46.0	56 9.5	56 31.7	56 52.5	57 11.8	57 29.7	12	12
44	51 37.0	52 8.1	52 37.8	53 6.8	53 34.7	54 1.4	54 27.0	54 51.3	55 14.5	55 36.3	55 56.8	56 15.7	56 33.4	16	16
40	50 45.7	51 16.2	51 45.4	52 13.8	52 41.3	53 7.6	53 32.6	53 56.5	54 19.3	54 40.7	55 0.9	55 19.5	55 37.1	20	20
36	49 54.1	50 24.1	50 52.7	51 20.6	51 47.6	52 13.5	52 38.1	53 1.6	53 24.0	53 45.0	54 5.0	54 23.4	54 40.6	24	24
32	49 2.2	49 31.6	49 59.8	50 27.2	50 53.7	51 19.1	51 43.4	52 6.5	52 28.5	52 49.3	53 9.0	53 27.1	53 44.2	28	28
28	48 10.0	48 38.9	49 6.6	49 33.6	49 59.6	50 24.6	50 48.5	51 11.2	51 32.9	51 53.4	52 12.8	52 30.8	52 47.8	32	32
24	47 17.5	47 45.9	48 13.2	48 39.6	49 5.4	49 29.9	49 53.4	50 15.8	50 37.3	50 57.5	51 16.7	51 34.4	51 51.3	36	36
20	46 24.7	46 52.7	47 19.5	47 45.6	48 10.9	48 35.1	48 58.2	49 20.4	49 41.4	50 1.5	50 20.4	50 38.0	50 54.7	40	40
16	45 31.7	45 59.3	46 25.6	46 51.4	47 16.2	47 40.1	48 3.0	48 24.8	48 45.6	49 5.4	49 24.2	49 41.6	49 58.1	44	44
12	44 38.4	45 5.6	45 31.6	45 56.9	46 21.4	46 44.9	47 7.5	47 29.1	47 49.6	48 9.2	48 27.8	48 45.1	49 1.5	48	48
8	43 45.0	44 11.7	44 37.3	45 2.3	45 26.5	45 49.7	46 11.9	46 33.2	46 53.7	47 13.0	47 31.4	47 48.5	48 4.9	52	52
4	42 51.3	43 17.7	43 42.9	44 7.6	44 31.4	44 54.3	45 16.3	45 37.4	45 57.5	46 16.7	46 34.9	46 52.0	47 8.2	2 56	2 56
21 0	41 57.5	42 23.4	42 48.4	43 12.6	43 36.2	43 58.9	44 20.6	44 41.4	45 1.3	45 20.3	45 38.5	45 55.4	46 11.5	3 0	3 0

LATITUDE 19°.													
Westerly Hour Angle.	DECLINATION — same Name as — LATITUDE.												Westerly Hour Angle.
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
h. m.	°	'	°	'	°	'	°	'	°	'	°	'	h. m.
24 0	84 0 0	85 0 0	86 0 0	87 0 0	88 0 0	89 0 0	90 0 0	89 0 0	88 0 0	87 0 0	86 0 0	85 0 0	0 0
23 56	83 55 4	84 54 4	85 53 2	86 51 2	87 47 1	88 37 3	89 3 3	88 37 4	87 47 4	86 51 4	85 53 6	84 54 8	4
52	83 41 9	84 38 6	85 34 0	86 26 7	87 14 4	87 51 2	88 6 5	87 51 9	87 15 3	86 27 9	85 35 2	84 39 9	8
48	83 20 5	84 13 9	85 4 7	85 51 2	86 30 9	86 59 0	87 9 8	87 0 0	86 32 6	85 53 3	85 7 0	84 16 5	12
44	82 52 5	83 42 0	84 27 9	85 8 8	85 42 1	86 4 7	86 13 1	86 6 0	85 44 6	85 11 9	84 31 7	83 46 1	16
40	82 18 7	83 4 4	83 46 0	84 22 0	84 50 5	85 9 2	85 16 4	85 10 9	84 53 6	84 26 2	83 51 2	83 10 3	20
36	81 40 7	82 22 7	83 0 4	83 32 3	83 57 2	84 13 3	84 19 6	84 15 4	84 1 1	83 37 7	83 7 0	82 30 5	24
32	80 59 2	81 37 8	82 12 1	82 40 9	83 2 9	83 17 2	83 22 9	83 19 5	83 7 5	82 47 3	82 20 3	81 47 5	28
28	80 15 0	80 50 6	81 22 0	81 48 1	82 7 9	82 21 0	82 26 2	82 23 6	82 13 3	81 55 6	81 31 7	81 2 2	32
24	79 28 8	80 1 8	80 30 7	80 54 6	81 12 6	81 24 5	81 29 5	81 27 5	81 18 7	81 3 1	80 41 7	80 15 1	36
20	78 40 7	79 11 3	79 38 3	80 0 3	80 17 0	80 27 8	80 32 8	80 31 3	80 23 7	80 9 8	79 50 4	79 26 3	40
16	77 51 2	78 20 0	78 45 1	79 5 3	79 21 1	79 31 4	79 36 1	79 35 2	79 28 5	79 16 3	78 58 8	78 36 9	44
12	77 0 3	77 27 7	77 51 2	78 10 2	78 24 9	78 34 8	78 39 4	78 38 8	78 33 0	78 22 2	78 6 7	77 46 3	48
8	76 8 9	76 34 3	76 56 8	77 14 8	77 28 8	77 38 2	77 42 7	77 42 6	77 37 4	77 27 8	77 13 7	76 55 1	52
4	75 16 5	75 40 8	76 1 8	76 19 2	76 32 7	76 41 5	76 46 1	76 46 1	76 41 8	76 33 1	76 20 2	76 3 2	0 56
23 0	74 23 7	74 46 6	75 6 9	75 23 2	75 36 1	75 44 9	75 49 3	75 49 8	75 46 1	75 38 3	75 26 6	75 11 0	1 0
22 56	73 30 2	73 52 4	74 11 5	74 27 2	74 39 4	74 48 0	74 52 9	74 53 4	74 50 3	74 43 3	74 32 7	74 18 5	4
52	72 36 4	72 57 7	73 16 1	73 31 0	73 42 9	73 51 3	73 56 1	73 57 1	73 54 5	73 48 2	73 38 6	73 25 5	8
48	71 42 2	72 2 5	72 20 4	72 34 8	72 46 4	72 54 6	72 59 2	73 0 8	72 58 7	72 53 2	72 44 3	72 32 2	12
44	70 47 5	71 7 2	71 24 3	71 38 7	71 49 9	71 57 7	72 2 7	72 4 3	72 2 8	71 57 9	71 49 8	71 38 8	16
40	69 52 8	70 11 7	70 28 4	70 42 1	70 53 2	71 1 2	71 6 0	71 8 0	71 6 7	71 2 6	70 55 4	70 45 1	20
36	68 57 6	69 16 2	69 32 2	69 45 6	69 56 5	70 4 7	70 9 5	70 11 5	70 10 8	70 7 0	70 0 7	69 51 3	24
32	68 2 4	68 20 3	68 36 0	68 49 1	68 59 7	69 7 7	69 12 9	69 15 2	69 14 7	69 11 7	69 5 7	68 57 2	28
28	67 6 8	67 24 4	67 39 7	67 52 5	68 3 1	68 11 0	68 16 2	68 18 9	68 18 9	68 16 0	68 10 8	68 3 0	32
24	66 11 3	66 28 3	66 43 4	66 56 0	67 6 4	67 14 2	67 19 6	67 22 5	67 22 8	67 20 6	67 15 9	67 8 8	36
20	65 15 6	65 32 2	65 46 9	65 59 4	66 9 7	66 17 5	66 23 0	66 26 0	66 26 7	66 25 1	66 21 0	66 14 5	40
16	64 19 6	64 36 0	64 50 5	65 2 8	65 12 9	65 20 8	65 26 3	65 29 7	65 30 7	65 29 4	65 26 0	65 20 2	44
12	63 23 7	63 39 7	63 53 9	64 6 1	64 16 1	64 24 1	64 29 8	64 33 4	64 34 7	64 33 9	64 30 8	64 25 7	48
8	62 27 6	62 43 4	62 57 4	63 9 4	63 19 4	63 27 3	63 33 2	63 37 0	63 38 8	63 38 2	63 35 7	63 31 1	52
4	61 31 5	61 47 0	62 0 8	62 12 6	62 22 6	62 30 7	62 36 7	62 40 7	62 42 7	62 42 7	62 40 6	62 36 5	1 56
22 0	60 35 4	60 50 5	61 4 1	61 15 9	61 25 9	61 34 0	61 40 3	61 44 3	61 46 7	61 47 0	61 45 4	61 41 9	2 0
21 56	59 38 9	59 53 9	60 7 5	60 19 2	60 29 2	60 37 4	60 43 7	60 48 2	60 50 7	60 51 4	60 50 2	60 47 2	4
52	58 42 5	58 57 4	59 10 8	59 22 4	59 32 5	59 40 7	59 47 2	59 51 9	59 54 7	59 55 7	59 55 0	59 52 5	8
48	57 46 0	58 0 8	58 14 1	58 25 7	58 35 8	58 44 1	58 50 8	58 55 6	58 58 8	59 0 1	58 59 8	58 57 8	12
44	56 49 6	57 4 2	57 17 4	57 29 0	57 39 1	57 47 5	57 54 3	57 59 4	58 2 7	58 4 5	58 4 6	58 3 0	16
40	55 53 1	56 7 6	56 20 7	56 32 3	56 42 4	56 50 9	56 57 8	57 3 1	57 6 8	57 8 9	57 9 4	57 8 3	20
36	54 56 6	55 10 9	55 24 0	55 35 5	55 45 7	55 54 3	56 1 4	56 6 9	56 10 9	56 13 3	56 14 1	56 13 5	24
32	54 0 0	54 14 3	54 27 3	54 38 8	54 49 1	54 57 7	55 5 0	55 10 7	55 15 0	55 17 5	55 18 9	55 18 6	28
28	53 3 4	53 17 6	53 30 5	53 42 1	53 52 4	54 1 2	54 8 6	54 14 6	54 19 0	54 22 1	54 23 7	54 23 9	32
24	52 6 8	52 20 9	52 33 8	52 45 4	52 55 7	53 4 6	53 12 3	53 18 4	53 23 2	53 26 5	53 28 5	53 29 0	36
20	51 10 0	51 24 2	51 37 1	51 48 7	51 59 1	52 8 2	52 15 9	52 22 3	52 27 3	52 30 9	52 33 3	52 34 3	40
16	50 13 4	50 27 4	50 40 4	50 52 0	51 2 5	51 11 7	51 19 6	51 26 1	51 31 4	51 35 4	51 38 1	51 39 4	44
12	49 16 6	49 30 6	49 43 6	49 55 3	50 5 9	50 15 2	50 23 3	50 30 1	50 35 6	50 39 9	50 42 8	50 44 6	48
8	48 20 0	48 33 9	48 46 9	48 58 6	49 9 3	49 18 8	49 27 0	49 34 0	49 39 8	49 44 3	49 47 7	49 49 8	52
4	47 23 3	47 37 3	47 50 2	48 2 0	48 12 7	48 22 4	48 30 7	48 38 0	48 44 0	48 48 9	48 52 5	48 55 0	2 56
21 0	46 26 6	46 40 5	46 53 5	47 5 3	47 16 2	47 25 9	47 34 5	47 41 9	47 48 2	47 53 4	47 57 4	48 0 2	3 0